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Foreword

Upon arrival in Pyŏngyang, Your Commission had immediately mapped out a plan to start inquiries into the electrical industry in North Korea. But we found it exceedingly difficult to execute our plan due to the following facts:

- (1) Social order was in chaos and confusion.
- (2) All industrial plants were controlled by members of the Labor Party, who had occupied over 80 percent of the factory employees.

- (3) By the end of September or on the eve of their defeat, the Communists had secretly drove away a score of trucks full of important documents and charts from the various factories toward Kanggye, Supung, and other places after having burnt remaining records, including private papers, in order to destroy all basic data that were necessary to our work. Collection of data from any other sources was impossible.
- (4) The Communist leaders threatened all staff workers and factory employees, numbering hundreds of thousands, to move to Kanggye and Manpochin with their families on foot.
- (5) A group of conscientious men, aloof from Red politics, returned from their hiding shelters, but because of the harsh control of peace squads, and the threatening propaganda of the Communist puppets, they contributed nothing to our work.
- (6) A large number of ambitious local people attempted to monopolize the electrical industry, and quarrelled among themselves. Thus the men from the Provincial Power Distributing Office, the City Power Distributing Office, the West Pyongyang Power Transmission Station, and the Municipal Electric Business Station stood face to face playing tricks against and pouring slander on each other, and interfered with the local electrical engineers in an effort to sabotage cooperation with Your Commission.
- (7) Another group, known as professional brokers and veteran appropriators, attempted to operate the electrical industry by themselves, and turned a deaf ear to our call for cooperation. Under these circumstances, we thought it best to restore the old Power Control Bureau, but it was infeasible to reestablish a unified organization by breaking up these local groups.

We finally felt it absolutely necessary to see a strong counter measure he formulated by the related ministry of South Korea in order to firmly establish a national policy of electricity as the national operation of the electrical industry in North Korea carried marked political color in all fields and resulted to a backward condition in structure and personnel administration.

At the request of the Electric Commission of the UN Armed Forces, we were able to decide on the field for construction of a power plant with the assistance of five engineers from the old Electric control Bureau by 10 October in order to secure current for pumping drinking water in Pyöngyang. Afterwards, we also cooperated with the same UN Commission in the survey of suitable locations to install generators at independent power plants such as the Japan Corn Products Company and the "Kanebo" Factory in Pyöngyang, and the Powership in Chinnampo, and in the restoration of power transmission lines which will induce current to all directions in Pyöngan-namdo.

We regret to say that our survey has made only a limited progress, because all major electrical facilities were mostly installed for them in the northern areas still unliberated.

This report fails to become a complete source material, because we had to make survey hastily in a period of great confusion, but we hope that it can be of some use in the establishment of a definite plan for electrical industry in North Korea.

In conclusion, we should add that this survey was conducted by a three-men party-Mr. YI Tae-chun, Bureau of Electricity, Department of Commerce and Industry; Mr KIM Hong-sik, Korea Power Supply Company (Chosön Chönp) ; Mr YUN Chae-sin, Seoul Electric Company (Kyongjöng or Keiden).

20 November 1950

Outline of Electrical Industry

in

North Korea

Operation of Electrical Industry in North Korea

After the liberation of August 1945, the People's Committee of North Korea combined the generating facilities of the old Korea Power Supply Company (Chosŏn Chŏnŏp) together with the receiving and distributing equipments of two other companies, ie, the North Korea Electric Union (Pukŏn Haptong), and the West Korea Electric Union (Sŏsŏn Haptong). Then this committee nationalized the operation of the electrical industry under the control of the Office of Electricity, Bureau of Industry, and reorganized its structure into three independent plants - Power Generation, Power Transmission, and Power Distribution.

To generate and distribute electricity, the People's Committee carried out the following plan:

- (1) Establishing the Hŏchŏn-gang Power Department by combining the two plants at Hŏchŏn-gang and Puryŏng in order to manage generation and transmission of electricity in the North-eastern area through the control of chief transformer substations of power plants other than those with a capacity of transmitting above 110 KV, and all independent power plants of home use at special factories located in that area.
- (2) Establishing the Changjin-gang and the Puchŏng-gang Power Department to manage generation and transmission of electricity in the Hŏngnam area.
- (3) Establishing the North-east Power Distributing Department, with branches at Chŏngjin, Najin, Pukchŏng, Tanchŏn, Hamhŏng, and Wŏnsan to manage operation of all facilities for transmitting, transforming, and distributing electricity above 66 KV in the North-East Area and in one part of Kangwŏn-do.

- (4) Establishing the Central Power Supply Department by combining both undertakings of the Kungangsan and the Hwachŏn Power Plants to manage generation, transmission, and distribution electricity for the Kangwŏn-do Area.
- (5) Establishing an independent Sup'ung Power Department at the Sup'ung Power Plant to manage generation of electricity in the North West Area.
- (6) Establishing the West Power Transmission Department as a controlling organ (with headquarters at the old Korea Power Supply Company's Pyŏngyang Power Transmission Office) to supply electricity, generated in the North-East Area and in Sup'ung, to operate high voltage transmission lines and transformer substations which will supply electricity to South Korea, and to manage operation of high voltage transmission and ~~transformation~~ transformation facilities in the North East and North West.
- (7) Establishing the North-West Power Distributing Department, with branches at Pyŏngyang, Pyongan-namdo, Namp'o, Kanggye, Sinŭiju, and Haeju to Manage Operation for Transmission, transformation, and distribution of electricity below 66 KV,

As a whole, the electrical industry of North Korea was operated by the above system from 1946 to 1948 (September). But the following independent power plants, with their transmission lines and transformer substations, were placed under the direct control of several specialized organs at the Bureau of Industry.

Names of independent powerplants; the Hŭngnam Fertilizer Factory; the Aoji Synthetic Oil Factory; The Sŏngjin Steel Mill; the Chŏngjin Textile Mill;

the Hwanghae Iron Mill; the Kangsŏn Steel Mill; the Pukchŏng Machine Shop; the Nampŏ Refinery; the Nampŏ Light Metal Factory; and other power plants at important factories and mines. These national industrial plants were primarily controlled by the office of Electricity, which saw to it that contracts were signed with other factories and industrial plants and electric power was supplied.

By way of carrying on operation, each plant also exercised police control for electric security in addition to its administrative duties for business enterprise, while at the same time, the office of Electricity made appropriations for each plant with the receipt of the Electric Distribution Department.

The Office of Electricity consists of two departments - Electric Power and Electrical Industry. In the field of electrical industry, the old West Union Electric Repair Shop was expanded into an independent plant, called "The Pyŏngyang Electric Machine Plant, where general repairs of electric tools as well as production of everyday electrical supplies were done,

In the meantime, the Kangsŏ Shop of the old Korea Iron Mill was also enlarged into an Electric Mill, where they started production of everyday electrical supplies.

The operation structure of electric power is as follows:

Bureau of Industry -

Office of Electricity

Director

Vice-Director

Department of Power Generation

Power Generation Section

Engineering Section Communications Section

Department of Power Transmission and Power Distribution.

Transformer Section

Power Transmission Section

Electric Power Section

D Department of Electrical Industry

Industrial Section

Tools and Machinery Section

Department of Planning

Basic Construction Section

Fund Planning Section

Planning Section

Department of Accounting

Budget Section

Accounts Section

Department of Business Operation

Business Operation Section

Material Section

Department of Staff Workers

Labor Section

Staff Workers Section

General Affairs Section

Department of Sup'ung Power Generation

Department of Hŏchŏn-gang Power Generation

Department of Changjin-gang Power Generation

Department of Puchŏn-gang Power Generation

Department of Central Electrical Industry

Hwachŏn Power Plant

Kŭmgangsan Power Plant

Chŏrwŏn Office

Department of North-East Power Distribution

Chŏngjin Branch

Hamhŭng Branch

Wŏnsan Branch

Pukchŏng Branch

Najin Branch

Tanchŏn Branch - 10 -

Department North-West Power Distribution

Sinŭiju Branch

Pyŏngan-namdo Branch

Pyŏnggang Branch

Namp'o Branch

Haeju Branch

Kanggye Branch

Department of North-West Power Transmission

Pyŏngyang Transformer Substation

Chochŏn Transformer Substation

Namp'o Transformer Substation

Tasado Transformer Substation

Unsan Transformer Substation

Namchŏn Switch Station

Sŏngyang Switch Station

Pyŏngyang Streetcar Business Office

Pyŏngyang Electric Bulb Factory

Pyŏngyang Electric Machine Plant

Kangsŏ Electric Machine Plant

* * *

They collected scrap silicon steel plates, and used them in the production of pole transformers (5 or 6 single-phase transformers of 10 KWH - Japanese Production Type).

Since no Silicon Steel is produced in North Korea, they transported 30,000 KVA iron cores of major transformers at the Tongnogang Power Plant of the old Korea Power Supply Company, which had imported them via Shibaura from Mecca (sic), but due to improper storage, and leakage of water, these articles gathered rust.

Sometime afterwards, these were transported to Pyöngyang and were wasted in the production of crude transformers and infant tools.

By and by, they found it difficult to install transformers at the Tongno-gang Power Plant to meet the demands of the Two Year People's Economic Plan (1949 - 50). Therefore, they ordered transformers from the Soviet Union.

Judging from these facts, it is apparent that production of electrical Supplies in North Korea was economically unprofitable and technically impossible, if not only a propaganda. Then, for the production of electric bulbs, they took over private Plants, including the Taemyöng Electric Bulb Factory, together with several glass factories of private undertaking, and they established a national electric-bulb plant where they produced about 500 electric bulbs of the Japanese type by using filaments that had been kept in stock during the Japanese regime. In the meantime, they struggled in raw materials for glass works from South Korea via blackmarketeers, and produced some crude electric bulbs with 100 hours of life. By controlling this electric bulb plant, they were able to operate the gas supply works in Pyöngyang.

Next, for the operation of streetcars in Pyöngyang, they separated the streetcar Section from the old West Korea Electric Company by changing its name as the Pyöngyang Streetcar Business Office, and ordered it to take over the whole business of running the streetcars.

The electrical industry was operated by the above system on the basis of a separate account. Accordingly, the National Treasury disbursed only such funds as deemed absolutely necessary for the investment in the expansion of production, with a definite burden of output to satisfy the standard consumption, which resulted in the guarantee of quantity rather than quality. However, they failed to accomplish the original plan. For example, many industrial plants, including the Kangsö Electric Machine Plant, proved to be a losing business and had to cover their red letter with the receipt from the Department of Electric Power.

Immediately after the liberation, all Japanese engineers left power plants, but up to the birth of the People's Republic the Office of Electricity continued operating the electrical industry in North Korea, except in Hamgyŏng-bukto where the electrical facilities had suffered the heaviest damage during the Korean War.

New Installation:

3 (Transformers?)

1 (Transformer?) of 5,000 KVA at the 2nd Generator, Changjin-gang Power Plant; 28 Km. Transmission Line (66 KV) between Changjin-gang and Hamhŏng; 3 (Transformers?) of 750 KVA at the 2nd Substation, 1 (Transformer?) of 5,000 KVA Hamhŏng;

2 (Transformers?) Of 4,000 KVA at the 2nd Substation, Ch'ŏngjin;

Erection of a new substation with one transformer of 110 KV - 40,000 KVA, and one transformer of 12,500 KVA at Kilchu Paper Mill;

4 Km. Transmission Line (110 KV), and one transformer of 110 KV - 34,000 KVA at Yongsŏng Substation;

In addition, 30 old substations, with transformers of medium and small sizes, were erected in other places to use electric power.

* * *

To supply more electric power to Wŏnsan and Kangwŏn-do areas, they started erecting, in September 1946, a new substation by assembling a three-phase transformer (154 KV, 66 KV, 22 KV - 40,000 KVA), which had arrived via Shibaura from Mecca (sic) for the construction of a light metal factory (Sumitomo) at Munpyŏng. But hardly the assembling of the transformer was finished in November of the same year before the the Soviet Army carried off this transformer of 40,000 KVA, interrupting the construction of the substation in question.

It was not until June 1947 that another three-phase transformer (154 KV, 66 KV - 15,000 KVA) was transported from Kanggye (with it had been removed from Unsan during the Korean War), and was installed in Munpyong after having reproduced its rusted iron core, and assembled all its dismantled parts. This was a great Success for the supply of more electric power, and for the establishment of a new plan connecting the two power supply systems - Hwachŏn and Changjin-gang.

To keep a balance of water level at reservoirs in the North East, the Hŏchŏn-gang system was greatly limited in generation of power. Naturally, it paralysed the reception of electricity at the two substations (220 KV) - in Chŏngjin and in Yonghŭng, and the restoration of a transformer (220 KV - 100,000 KVA) at the Chŏngjin Substation was urgently required. Therefore, a spare transformer of 100,000 KVA was moved from Chinnampo to Chŏngjin, where its installation work was commenced in September 1947 and was completed in November 1948. As a result, it was possible to normally supply current by 220 KV to areas, north of Chŏngjin, and by 110 KV to factories in Kilchu, Sŏngjin, and Aoji.

In the meantime, in order to increase generation of electricity at the Hŏchŏnggang system, the Hŭngnam substation was erected by using two transformers (200/11 KV- 80,000 KVA) at the East Hŭngnam Substation, and adding five circuit lines out of the already installed connecting line of 11,000 V, thus supplying an average 100,000 KW to the Hŭngnam Fertilizer Factory, while maintaining the balance of the water level by increasing generating at the Hŏchŏn-gang, and diminishing the same at the Puchŏn-gang.

The decayed water mill bucket on No. 1 Generator at the Puchŏn-gang Power Plant was replaced by a new bucket, produced in North Korea after liberation. But partly due to its uneven balance of weight to a dangerous point, and partly due to the necessity of supplying water for irrigation on the Hamhŭng Plain, this new bucket accomplished an insignificant working efficiency, and at normal times, it was only employed in a limited generation of power for the use of industrial plants in the Hŭngnam Area.

The transformer of 80,000 KVA at the Yonghung Substation, which had been receiving current from the Hochon-gang via the East Hungnam connecting line of 220 KV, was accidentally burnt during a filtering operation with insulator oil immediately after the liberation, and it was impossible to receive current from the Hochon-gang system. Therefore, it was decided to transport a three-phase transformer (220/33 KV - 70,000 KVA) from the Showa Denko, an old Japanese electric plant in Chinnampo, in order to have it installed at the Yonghung Substation, and they succeeded in recoiling the secondary electric pressure into 11,000 Kv, insulating taping, and assembling the whole set.

But, while installing the transformer tank and the oil pipe cooling apparatus, the test with water pressure ended in failure because of the weakness of the tank, and this test was not completed until 25 June 1950.

In the North West Area, work had also started to remove, add, and erect transformers following the increased production of electricity since 1946 up to 1947. Thus the Inhung Substation (10,000 KVA) is being expanded to supply more current to Pyongyang; the Central Substation at Sinuiju (15,000 KVA) is being newly erected; the existing transmission line (22 KV) between Chochon and Taeharyong is being reinforced up to 66 KV; the transmission line (220 KV) between Supung and Chochon has changed its route along the new basis of the Chongchon-gang from Yongmi-to Sukchon (17 Km.) The construction of the last mentioned project was started in April 1947 and was completed in October 1948.

In erecting new iron towers, they assembled old materials, which the Japanese had imported via Shibaura from Mecca (sic), although these were different from the existing materials in type and in the method of laying out the 1 elevated and ground cables. While, at the same time, various new installations

restorations, and improvements were accomplished at the No. 1 Substation (15,000 KVA), PYŏngyang, and at other power plants, major factories, and mines.

At this juncture, one event of political significance happened, i.e., in December 1945, the Soviet Army dismantled two generators and two transformers of 100,000 KVA, at the Sup'ung Poer Plant, and had them transported to the Soviet Union. In dismantling these equipments, they cut the shafts of the generators in the middle, and also cut the casings in the middle by using oxygen.

Since the Liberation up to the first part of 1948, the facilities for the production of electricity were restored, and the power generation during that period was reported as shown on the separate table. As for the use of electricity, the burden of the electric heat and the electric boiler in major industrial plants occupied the lions share of the power generated as compared with other uses at ordinary factories, including chemical plants.

In the cost accounting, the production of electricity was much cheaper than that of coal, and since the stopping of electric supply to South Korea, the rich hydro electric power was freely used in all fields in North Korea to prevent the flooding of reservoirs. As a result, disregarding the economic advantages in using coal, they invested large amounts of capital in the various electrical installments without paying attention to the conservation of electricity. Therefore, although the North Korean propaganda boasted low cost of electricity, it does not agree with facts. For instance, in the zinc refineries, the per ton consumption of electricity reached to 6,000-8,000 KWH as compared with 4,000 KWH, which is the basic volume of the past, while the managers at the industrial plants installed superfluous electrical apparatus under the pretext that electricity is only a minor item in the cost accounting, and thus wasted power in large amounts for their small productions.

The restoration period of 1946 - 1947 had past, and from 1948 they entered upon a new period of expansion of production, which naturally looked on electricity as one of the major problems. Therefore, early in 1948, the supply of electricity was much limited by cutting the electric heating at private homes in order to increase the same at industrial plants.

With the creation of the People's Republic, in the meantime, the Bureau of Industry was changed to the Ministry of Industry, and its several Offices to Bureaux under the new Ministry. Then North Korea was divided into two areas - the North-East and the North-West to facilitate the distribution of electricity, while the existing distributing branches were promoted as independent industrial plants in accordance with the new structure:

(As of November 1948)

Ministry of Industry -

Control Bureau of Electricity

Supung Power Department
 Hŏchŏn-gang Power Department
 Changjin-gang Power Department
 Puchŏn-gang Power Department
 Kangwŏn Power Department
 Sonŭiju Power Distributing Dept.
 Pyŏngnam Power Distributing Dept.
 Haeju Power Distributing Dept.
 Pyŏngyang Power Distributing Dept.
 Kagggye Power Distributing Dept.
 Nampo Power Distributing Dept.
 Wŏnsan Power Distributing Dept.
 Hamhŭng Power Distributing Dept.
 Chŏngjin Power Distributing Dept.
 Tanchŏn Power Distributing Dept.
 Kangsŏ Electric Machine Plant.
 Pyŏngyang Electric-Bulb Factory
 Pyŏngyang Streetcar Business Office
 North-West Electric Transmission Dept.

Remarks: The power distributing branches under the old Kangwŏn Power Department has been incorporated into the Wŏnsan Power Distributing Department, and the Pyŏngyang Electric Machine Plant into the Kangsŏ Electric Machine Plant.

Electric Power Generated

Year

1946	3,942,806,831 KWH
1947	5,576,798,716 KWH
1948	6,130,827,752 KWH
1949	5,942,121,340 KWH
1950 (End of May)	1,765,096,800 KWH (First Quarter)

Supply to China (Average electric Power)

1946	510,985,742 KWH
1947	389,457,824 KWH
1948	545,333,361 KWH
1949	595,467,526 KWH
1950	220,112,441 KWA (First quarter)

Under this new structure, the business operation continued as before, and the independent industrial plants, engaged in the distribution of electricity has been able to control the security of electrical establishments, and to execute the general business with good effects.

To accomplish the People's Economic Plan of 1948, more than 1,000,000 KW of electric power was required by the various factories and mines. Therefore, a decision was published in order to prohibit the non-productive use of electricity. This decision was carried out most effectively from the second part of 1948 up to 1949, and even the industrial plants throughout North Korea had to replace their electric boilers for coal boilers since the first quarter of 1950, leaving a surplus of 100,000 KW. of electricity, and since the stopping of supply of electricity to South Korea an order was issued to the effect that the power generated at the Hwachŏn Substation be used at its maximum. Accordingly, on 20 November 1948, one circuit transmission line of 56 KW/ was erected between Sorubang and Wiik, a distance of 36 KM, and started supplying current at an average of 7,000 KW. or at a maximum of 10,000 KW. to all mines

in the areas of Wönsan and Iryöng.

To electrify railroads of the Pyöngyang-Wönsan Line and the Pyöngyang-Manpb Line, two sections between Yangdok and Chönsöng (52 KM/0, and between Kupyön and Koin (27KM.) were selected with a plan to instal electrical apparatus thereon by using four sets of mercury-vapor rectifiers transported from ,ambang and Pokkye (leaving only one set each at the original places); two rotary-converters transported from Yangjiri, Kümgangsän whither they had been moved for safety; trolley wires kept in stock, imported from the USSR, and produced at the Söngjin Steel Mill, in addition to collected or home-made electrical parts such as metal fixtures, insulators, electric wires, and the supports for the instruments at the substations.

The Control Bureau of Electricity, Ministry of Industry, took charge of the design and the engineering operation for all installations of transmission lines and transformer substations, while the Bureau of Electricity, Ministry of Transportation laid out trolley wires. To assist the construction, more than a ten thousand people, including engineers, technicians, laborers, and office-workers, had been drafted a day during the whole process. Work commenced in September 1948, and completed in January 1949 in a bad condition, for haste made waste in many parts of the construction, which needed many repairs afterwards.

The greatest technical difficulty was the connection of trolley wires, and the equipment of filters for the dprevention of obstruction to the inducedcommunication lines, the detailed description of which is omitted, and we here only show the out line of results of this construction.

(1) Pyöngyang - Wönsan Line

- (a) New transmission facilities for the supply to current to the electric railroad.

Name of trans- mission Line	Section	Length	Number of Circuit lines	Electric Wire	Support	Wire Voltage
Söktang Trans- mission Line	Inpyögn- Söktang	18	1	Haed, bare copper 7/2.6	Wood	66 KV
Kangpyöng trans- mission Line	Inhüing Kwanpyöng	28	1	"	"	"
R.R Connection Transmission Line	Söktang- Kwanpyöng	27	1	"	"	"

(b) Transformer Equipments

Name of Substation	Transformer	Mercury-Vapor Rectifier	Remarks
Söktang Spa Substation	66/22 KV 34 4,000 KVA x 2	PC 3,000 4,000 KVA x 2	Transported from Pokkey
Kwanpyöng Substation	66/22 KV 34 4,000 KVA x 2	PC v 3,000 4,000 KVA x 2	Transported from Sambang

(2) Pyöngyang-Manpö Line

For transmission facilities, a substation, directly branching off from the existing Unsong Transmission system, has been established.

For transformer facilities, three transformers of 66/11 KV, 900 KVA, and two transformers of rotary deflectors and 11,000 VBC, 750 V with a capacity of 750 KVA, have been installed.

Since the electric locomotive is of 1,500 V, two rotary deflectors are directly attached at all times to haul the train more easily.

The filter equipments for the prevention of obstruction to the induced communication lines were produced at the Kangsö Electric Machine Plant as the transportation of these machines from Pokkey was impossible, and a new design was made to produce the flank balance resistors of 3,000 V, with direct current at the same plant, but there was a great loss of electric power in their making, for they used the water resistance.

As the flank feeding wire with direct current required a capacity of 3,000 A, two steel-core if aluminum wires (400 mm²) were used, and a suspension-type insulator (254 M/M) it also being used.

In this way, they had poured their energy into the electric railroad and saw its completion in four months by compulsory labor.

Under the tow year People's Economic Plan (1949 - 50) the Tongno-gang Power Plant Construction Office was established and work was immediately started for a basic construction with a view to generate about 20,000 KW. during the rainy season in July 1950. But, due to an urgent repair on the north apron of the Supung Dam under a Soviet Plan, the Tongno-gang Construction dropped behind, and the transmission line construction (154 KV) ~~XXXX~~ between Hwachon and Munpyong was cancelled. Moreover, a 27 percent cut was announced on all repairs of the existing electrical facilities, and only 15,000 wood-poles, out of 30,000 poles planned, were produced.

In the meantime, war-damaged steel pipes, two generators of 8,600 KVA, and three transformers of 63/66 KV, 5733 KVA at No. 1 Power Station, Puryong, were completely restored in November 1948 (work started in September 1947) by new production and repair of machines, enabling generation of electricity once again. t Then a new plan was made to restore two more generators of 6,00 KVA at its No. 2 Power Station, and work started early in 1949, but the generators were so badly damaged that was ones, including shafts and iron cores, had to be produced at the Kangsŏ Machine Plant. The basic test with electricity was found good, but no test with its mechanical strength was made, because the shafts of the generators bent in S shape with the upper and lower thrust metals badly burnt, making it impossible to work, and up to June 1950 no perfect generation ~~and~~ of electricity had commenced.

Another important basis construction was the building of an iron railroad bridge, spanning the Tuman-gang to maintain a huge transportation strength between Korea and the Asiatic Soviet Russia across that frontier river, and work had already been undertaken.

In this connection, a substation was required to supply 2,000 KW of power for this gigantic engineering, 2,000 KW of power for revolving this iron bridge and railroad locomotives. - or a total of 4,000 KW to 5,000 KW of electricity. Accordingly, the Chŏkchi Substation changed its capacity of 22 KV into 66 KV, and work started in April 1950 to lay out 28 KM of transmission lines of 66 KV. But this project was suspended when they had proceeded with erecting 30 percent of poles for the transmission lines.

For the preparation of the Korean War, the expansion of production in all factories and mines was deemed necessary and especially the Soviet engineers made mine prospecting tours throughout North Korea in order to transport increased production of lead and monazite ores to the Soviet Union.

In consonance with the Soviet Plan, the North Korean regime issued a cabinet Decision to see that the equipment of substations for greater supply of current be executed with rapidity. Accordingly many transmission lines and transformer substations were erected at the Kyesaeng Mine, the Chŏlsan Mine, the Samchŏn Mine, the Vllim Mine, the Nagyŏn Mine, and the Sŏngchŏn Mine, and other lead producing mines.

During the year of 1950, more power installations supplying electricity for emergency use were urgently required, and the strengthening of generation and transmission activities was repeatedly called upon in order to utilize 100 percent of all electrical resources. Under these circumstances, reorganization of the Control Bureau of Electricity and its affiliated industrial plants was carried out so execute a more effective operation in all fields of electricity.

The revised structure is as follows:

Ministry of Industry-

Control Bureau of Electricity

Sup'ung Power Department
 Changjin-gang Power Department
 Puch'ŏn-gang Power Department
 Hŏch'ŏn-gang Power Department
 Puryŏng Power Department
 Hwach'ŏn Power Department
 Kŭmgangsan Power Department
 West Transmission Department
 East Transmission Department
 /Pyŏngyang Distribution Department
 Pyŏngan-namdo Distribution Department
 Pyŏngan-bukto Distribution Department
 Hwanghae-do Distribution Department
 Chagang-do Distribution Department
 Kangwŏn-do Distribution Department
 Hamgyŏng-namdo Distribution Department
 Hamgyŏng-bukto Distribution Department
 Kangsŏ Electric Machine Plant
 Pyŏngyang Electric Bulb Factory
 Pyŏngyang Street-car Business Office
 Kangsŏ Electrical Research Institute

It is to be noted that one distribution department was organized for each province as a unit as in the case of the administrative system; each generating system has become an independent organ; The transmission system has been divided into two departments - the East and the West; the transmission and transformer facilities of 11,000 KV. under the control of the former Distribution Department, have been transferred to each department of transmission and distribution; the Distribution Department controls only minor stations with less than 3,300 V, and chiefly executes business functions.

Control Bureau of Electricity

Director

Chief Engineer:

- Generation Department
- Transmission Department
- Electrical Industry Department
- Basic Construction Department
- Central Distribution Department
- Oil and Fat Experimental Department
- Power Developing Department
- Central Communication Department
- Central Electricity Readjusting Department
- Central Electro-meter Inspection of Repair Department

Vice-Director:

- Material Supply Department
- General Affairs Department
- Business Department
- Labor Department
- Staff Department
- Financial & Accounting Department Planning Department

The above is an outline of the electrical industry in North Korea up to 25 June 1950. After the outbreak of the Korean War all factories in North Korea were transferred to munition plants of manual labor, and the planned production had gradually decreased. Especially, following bombing of major factories at Hŭngnam, Sŏngjin, Chŏngjin, Chinnampo, Wŏnsan, etc., since 23 July, the total electric power of 700,000 KW or 800,000 KW had dropped to only 10,000 or 20,000 KW. by the middle of September of the same year. Therefore, in order to minimize the damage from bombing, more than 50 percent of the generators and transformer equipments at the power plants was dismantled and moved to other places of safety.

Because of severe bombing, however, the transmission lines of 220 KV between Supung and Chochon had suffered a big damage, and its reception of power had become impossible, and since the destruction of the Pyŏngyang Substation, the reception of 1954KV from Changjin-gang also became impossible, so it received only about 6,000 KW from Changjin-gang through the transmission line of 66 KV, and made limited supplies to the North-West Area.

By that time, all industrial plants in North Korea had been completely destroyed except a few factories where infant weapons were produced by manual labor. Moreover, the Supung transmission line of 220 KV was repeatedly bombed near Sinanju, and the Supung Power Plant supplied only about 8,000 KW to Tasato and (?) KW to China.

After five major factories at Hŭngnam were bombed out, and production activities in that area had been paralysed, the Puchŏn-gang and the Changjin-gang Systems were obliged to suspend generation, while only one generator of 40,000 KVA at No. 1 Power Station, Hŏchŏn-gang, continued its supply to the North-East and the North-West.

In other words, the generation facilities in North Korea, as a whole, had lost their capacity of production due to terrific bombing.

The following table shows bombing damages suffered by the principal power divisions:

<u>Locations</u>	<u>Equipments damaged</u>	<u>Capacity</u>	<u>Quantity</u>	<u>Stent of Damages</u>
Hŭngnam Power Plant	Principal Transports	KVA 50,000	7	Complete ruin; Repair impossible.
"	Rotary converters	,3,500	30	Seven repairable
Chŏngjin Sub-station	Transformer	100,000	1	
"	"	20,000	1	All burnt
"	"	15,000	1	Destroyed burnt
Pongung Sub-station	"	20,000	1	"
"	"	5,000	1	"
"	"	34,500	2	"
Sŏngjin Substation "		10,000	3	"
Yonghŭng Substation "		60,000	2	"
Aoji Substation	"	34,500	1	(Tank damaged by rifle bullets.
Chinnampŏ Substation	"	100,000	1	All burnt

Pyongyang Substation (No. 2)	Transformer	100,000	2	Parts burnt One repairable
Pyongyang Substation (No. 1)	"	15,000	6	All burnt there repairable
Kilchu Substation	"	3,333	1	Parts damaged by machine- gun bullets.
Puchon-gang Power Plant (No. 1)	Generators	36,000	2	Coil damaged in One; Casing damaged in one
"	Transformer	36,000	1	Destroyed and burnt
"	"	350	2	"
"	Wire Ropeway (No. 5)			No. 5 & 6 Blocks destr- oyed.
Changjin-gang Power Plant (no. 1)	Transformer Blowout Coil of arc light	40,000	1	

As reported in the above, all transformer instruments of 110 KV class had been destroyed from bombing up to the end of September, not to speak of countless instruments of 66 KV class, and although some Transformer facilities had escaped bombing the power transmission was inactive because of the total destruction of factories.

Immediately after the Liberation by the UN Armed Forces, electricity was absolutely required for the maintenance of peace and order, and for the restoration of peace industries.

It would be exceedingly difficult to restore power equipments in a short time, but at least an exhaustive survey and checking should be carried out in order to protect all remaining equipments from further damage.

At present, the coolers on the ~~max~~ principal transformers at the Pyongyang Substation (No. 1) is being frozen to a point of explosion for lack of proper care; the multiple-phase machines of 10,000 KVA and their insulators are gathering rust underground;

the principal metal-parts and coils are buried rotting in soil, but no mechanical protection is extended; the various electric tools and machinery at their hiding shilters are also in rust, for the absend of any caring hand.

Far from establishing an overall counter-measure for protection of these machines, only a local plan is being adopted to utilize electrical power by operating diesel generators of minor capacity. This method is ineffective unless a thoroughgoing repair is made on the transmission lines and transformer instruments.

We regret that there is no organized structure to preserve and protect the warform power equipments scattered all over North Korea. Therefore, we suggest that a definite plan be formulated by the competent authorities of the Republic of Korea as soon as possible in order to save the remaining electrical properties in our newly liberated territory.

Transmission and Transformer Facilities
(Additions and Removals)

November 1950

STATISTICS OF SBSTATIONS

<u>Items/Substations</u>	<u>22 KV</u> <u>No. Cap.</u>	<u>154 KV</u> <u>No. Cap.</u>	<u>66 KV</u> <u>No. Cap.</u>	<u>22 KV</u> <u>No. Cap.</u>	<u>Total</u> <u>No. Cap.</u>	<u>Re-</u> <u>marks</u>
New installation		1 15,000	15 67,260	23 13,126	39 75,386 KVA	
Additions	1 100,000		15 69,110	7 10,970	23 180,080 KVA	
Removals			11 30,580	11 7,500	22 38,080	

Statistics of Transmission Lines

<u>Items/ Voltages</u>	<u>110 KV</u>	<u>66 KV"</u>	<u>32 KV"</u>	<u>11 KV</u>	<u>Total</u>	<u>Re-</u> <u>marks</u>
Additions	4 Km	104 Km	308.3 KM		416.3 KM	
Removals		91 Km	128.6 Km		219.6 Km	

Camparison with figures of 15 August 1945

As of 15 August 1945:

- (1) Number of Substations 276
Total capacity 1,366,560 KVA
- (2) Percentage of number of Substations.
- A. New installations 14.1 percent
B. Removals 8.3 percent
C. Additions 8.3 percent
- (3) Percentage of voltages
- A. New installations 7 percent
B. Removals 28 percent
C. Additions 13 percent

Survey of Substations (Since 15 August 1945)

<u>Name of Substations</u>	<u>Voltage & Capacity</u>	<u>Kind</u>	<u>Date of Work Completion</u>	<u>Remarks</u>
Saengjang	66/33 100x3	New	November 1949	for Saw Mill
Nanam	66/33 1000x4	"	October 1948	General Supply
Kwanpyŏng	66/22 4000x1	"	January 1950	Electric Railroads
Pyŏngyang	22/33 100x3	"	August 1947	General Supply
Hamhŭng (NO.2)	66/33 1500x4	"	October 1947	Electric Heat & General Supply
Sŏgwangsa	22/33 200x4	"	September 1949	General Supply
Kojin	22/33 200x3	"	July 1948	Recreation
Changjŏn	66/22 1500x4	"	August 1949	General Supply
Chŏrwŏn	22/33 200x3	"	October 1946	"
Chŏkkŏchi	22/33 500x3	"	April 1948	Water Pumping
Pyŏlha	66/33 500x2	"	October 1946	General Supply
Kuhyŏn	66/11 900x3	"	January 1949	Electric R/R
Samgang	66/33 75x3	"	December 1946	General Supply
Kyesaeng	22/33 200x6	"	June 1950	Mines (Lead)
Paengnyang	22/33 300x3	"	September 1949	Mines (Monazite)
Charyŏngwan	66/33 300x3	"	June 1950	Mines (Monazite)
Chŏlsan	22/33 200x3	"	December 1949	"
Puryŏng	22/33 100x3	"	December 1949	"
Sinŭiju Central	66/33 500x3	"	August 1947	General Supply (Factories)
Toksan	22/33 200x3	"	April 1948	Water Pumping
Yŏnho	22/33 200x3	"	October 1948	"
Chŏngsan	22/33 200x3	"	November 1949	General Supply
Yangchŏn	22/33 200x2	"	March 1948	"
Unsan	22/33 200x3	"	October 1948	General Supply
Haerŏe	22/33 200x3	"	June 1949	Water Pumping
Sinsŏngchŏn	22/33 200x3	"	March 1949	Mines (Zinc)
Wŏlli	22/33 100x6	"	June 1948	Mines (natural Cokes)
East-Pyŏngyang	66/11 12500x1	"	December 1949	General Supply
	66/33 1500x1	"		
Tongch'angpŏ	22/33 100x6	"	April 1946	Water Pumping
Pungnyul	22/33 300x4	"	September 1948	"
Samchŏn	55/12 750x4	"	September 1950	Mine (Gold, Lead)
Sŏchŏn	12/33 300x2	"	May 1947	Nagyŏn Mine
Chungsan	22/33 100x2	"	May 1947	Water Pumping
Chinchiyŏn	66/33 500x3	"	October 1948	Water Pumping
Pungchŏng	22/33 200x3	"	May 1947	General Supply
Mundong	22/33 100x2	"	May 1947	Water Pumping
Sŏkt'ang Spa	66/22 400x1	"	January 1949	General Supply
Anju Coal Mine	66/33 1500x4	"	October 1948	Electric R/R
Munpyŏng (154 KV)	154/66 15,000x1	"	October 1948	Mine (Coal)
Ŭndong	22/33 100x3	Removal	May 1947	Power (Factory) Due to Abandon of Ŭndong Mine
Ŭndong	22/33 300x4	"	May 1948	"
Wanpung	66/33 300x4	"	October 1948	"
Paengnyang	22/33 200x3	"	October 1947	"
Ipsŏk	22/33 200x3	"	May 1950	Construction of New Substation (66 KV) at Anju Coal Mine
Odong	22/33 200x3	"	October 1949	Abandon of Odong Mine
Yudong	22/33 100x3	"	September 1949	Change of Line (50-22 KV)

<u>Name of Substations</u>	<u>Voltage & Capacity</u>	<u>Kidd</u>	<u>Date of Work completion</u>	<u>Remarks</u>
Kiyang	66/33 100x3	Removal	July 1948	Utilizing Kiyang Chemical Substation
Hasong2	66/23 100x4	"	October 1946	Abandon of Hasong Iron Mine
Unbong	66/33 1500x4	"	March 1947	To Samgang Sub-Station (from Chin
Chilpyong	66/33 50x4	"	September 1946	Supply from Tong-Chom Substation (Chilpyong Mine)
Sinpyong	22/33 200x3	"	December 1946	Abandon of Sanyon Mine
Changnim	22/33 200x4	"	March 1950	Supply Changnim Substation (66 KV)
Cgangsán	66/22 250x4	"	April 1947	Abandon of Changsan Mine
Kangsó Coal Mine	66/33 250x4	"	May 1950	Abandon of Kangsó Coal Mine
Taetheryong	22/33 300x3	"	December 1948	Construction of New Substation (66 KV)
Songyori	66/11 440x7 66/33 750x7	"	January 1949	Con. of New. at Tong-Pyongyang
Majang	66/33 510x2	"	September 1948	Abandon of Yongtu Mine
Munpyong Steel Pipe	22/33 500x1	"	June 1950	Abandon of Steel Pipe Factory
Songjin (No.1)	66/22 1000x5	"	November 1949	Supply from Substation at Chongjin Steel Mill
Anbyon	22/33 200x3	"	October 1947	Addition at Paehwa Substation
Yangyang	66/22 1500x4	"	April 1949	Interruption of Power Reception in South of 38th Parallel
Pukchin	66/33 750x4	Addition	October 1949	Restoration of Unsan Mine
Inhungni	66/33 1,000x1	"	October 1948	Increase of Gen. Demand.
Tongdaewon	66/33 700x2	"	November 1947	Increase of Gen."
Nampo (No.1)	66/33 500x3	"	June 1948	"
Mach'anmni	22/33 150x3	"	August 1948	Expansion of Reservoir (Nampo)
Wönumni	22/33 200x3	"	October 1949	Expansion of Salt Mill
Chaeryong	66/22 5,000x2	"	September 1950	Increase of Pumping and Mining
Sariwon	66/33 1500x2	"	June 1948	Increase of Gen. Demand
Sinchon	22/33 2000x2	"	December 1949	Increase of Pumping
Kanggye	66/33 1500x4	"	March 1947	Increase of Gen. Demand.
Optong	66/22 1500x1	"	April 1950	Increase of Chonma Mine
Sonchon	66/22 1000x2	"	April 1950	" Chölsan Mine
Ungok	22/33 200x3	"	June 1949	Expansion of Mines
Chongju	22/33 2000x3	"	December 1949	Increase of Gen. Demand
Sunchon	66/33 500x2	"	June 1948	Increase of Pumping
Myohyangsan	22/33 100x3	"	October 1947	Exploitation of Myohyangsan Mine

<u>Name of Substations</u>	<u>Voltage & Capacity</u>	<u>Kind</u>	<u>Date of Work Completion</u>	<u>Remarks</u>
Parwŏn	66/33 750x3	Addition	September 1948	Increase of Gen. Demand
Chŏngjin (No.2)	66/22 4000x2	"	November 1947	Increase of Power at Factories
Chŏngjin (NO.1)	220/66 100,000x1	"	November 1948	To supply power to Hamgyŏngbukto
Paehwa	22/33 200x3	"	October 1947	Increase of Power at Factories
Iryŏng	66/22 22/33 500x3	"	October 1948	Increase of Mines
Hoeryŏng	66/33 750x3	"		Increase of Gen. Demand for Power.
	1000x4			
Yongdanp'o	66/33 1000x3	"	September 1948	Expansion of Haeju Refinery

Survey of Transmission Lines (After 15 August 1950)

<u>Name of Line</u>	<u>Voltage</u>	<u>Kind</u>	<u>Section</u>	<u>Length</u>	<u>Date of Work Completion</u>	<u>Re-Mark</u>
Taetaeryong			Chochon-Inhungni			
Connecting Line	66KV	New		7 Km	December 1948	
Samchon	"	"	Chaeryong-Samchon	18 "	September 1950	
Anju Coal Mine	"	"	Maengchungni (No.1)			
			Anju Coal Mine	10 Km	December 1954	
Kwanpyong			Kwanpyong			
Connecting Line	"	"	Soktang Spa	27 Km	October 1949	
Sambang-wiik						
connecting Line	"	"	Sambang-wiik	32"	November 1948	
Nanam	"	"	Chuil-Nanam	3 "	October 1948	
Saengchang	"	"	Hyesan-Saengchang	4 "	December 1949	
Changjon	"	"	Sinillipal-Changjon	35	June 1949	
Hamhung (No.2)	"	"	Changjin-Hamhung	4	November 1947	
			(No.4) (No.2)			
Kyesaeng	22 KV	"	Unsaeng-Kyesaeng	65	June 1950	
Paengnyang	"	"	Pusong-Paengnyang	7	July 1949	
Cholsan	"	"	Pusong-Cholsan	2	December 1949	
Pungchong	"	"	Taepyong-Pungchong	28	May 1947	
Tongchangpo	"	"	Chaeryong-Tongchangpo	6	May 1946	
Sochon	"	"	Hanpo-Sochon	30	May 1947	
Pungnyul	"	"	Anak-Pungnyul	12	August 1948	
Yonho	"	"	Sinanju-Yonho	6	October 1948	
Taetaeryong						
connecting Line	66KV	"	Chochon-Inhungni	7	December 1948	
Samchon	"	"	Chaeryong-Samchon	18	September 1950	
Anju Coal Mine	"	"	Maengchungni (No.1)			
			Anju Coal Mine	10	December 1949	
Kwanpyong			Kwanpyong-Soktang	27	October 1949	
connecting Line	"	"	Spa			
Sambang-Wiik	"	"	Sambang-Wiik	32	November 1948	
Nanam	"	"	Chuil-Nanam	3	October 1948	
Saengjang	"	"	Hyesan-Saengchang	4	December 1949	
Changjon	"	"	Sinillipal-Changjon	35	June 1949	
Hamhung (No.2)	"	"	Changjin-Hamhung	4	November 1947	
			(No.4) (No.2)			
Kyesaeng	22KV	"	Unsaeng-Kyesaeng	65	June 1950	
Paengnyang	"	"	Pusong-Paengnyang	7	July 1949	
Cholsan	"	"	Pusong-Cholsan	2	December 1949	
Pungchong	"	"	Taepyong-Pungchong	28	May 1947	
Tongchangpo	"	"	Chaeryong-Tongchangpo	6	May 1946	
Sochon	"	"	Hanpo-Sochon	30	May 1947	
Pungnyul	"	"	Anak-Pungnyul	12	August 1948	
Yonho	"	"	Sinanju-Yonho	6	October 1948	
Chongsan	"	"	Yongyu-Chongsan	12	October 1949	
Tanchon	"	"	Ibwon-Tanchon	24	September 1948	
Chokchi	"	"	Aoji-Chokchi	20	April 1947	
Sogwangsa	"	"	Paehwa-Sogwangsa	12	October 1949	
Kojin	"	"	Saju-Kojin	32	July 1948	
Sokcho	"	"	Koju-Sokcho	12	July 1949	
Yongan	"	"	Hoeryong-Yongan	18	November 1949	
Chungdo	"	"	Hoeryong-Chungdo	43	November 1949	
Yongsong	110	"	Pongung-Yongsong	4	November 1946	
			(No. 46)			
Majang	66	Removal	Unsa-Majang	29.5	October 1948	
Wanpung	"	"	Taeyutong-Wanpung	19	October 1948	
Naksan	"	"	Kwanhae-Naksan	15	April 1950	
Pokkye	"	"	Kumha-Pokkye	275	October 1949	one circuit line removed

Name of Line	Voltage	Kind	Section	Length 4 Km	Date of Work Completion	Re- marks
Maengchungni (one part)	66KV	Removal	Sinanju-Maengchungni		March 1950	
Ungdong	22	"	Kaego-Ungdong	22	June 1948	
Udong	"	"	Udong-Ungdong	45	May 1947	
Songpyong	"	"	Taepyongdong- Songpyong	24	December 1946	
Changpudong	"	"	Changpudong- Yudong	12	August 1949	
Paengnyang	"	"	Pusong-Paengnyang	8	March 1949	
Oagwa Branch	"	"	Paehwa-Anbyon	5.6	October 1947	
Pangyo	"	"	Sakchu-Pangyo	12	December 1946	

Transmission Line as of June 1949

Section/kind	22	66	110	154	220	Total
Hochon-gang						
length	24,274	49,916	415,760		365,503	855,453
Extension	72,822	49,738	2,466,810		1,096,509	2,785,879
Supports	469	374	1,490		1,004	3,337
Changjin-gang		90,537	106,987	122,357	7,966	327,847
		271,700	611,000	499,400	24,000	1,406,100
		831	385	358	26	1,100
Puchon-gang	1	146.3	299.5			445.8
		362	673			1,035
West Trans- mission		17.3		477.7	293.6	758.6
		103.8		2,505.3	580.8	3,189.9
		64		1,306	765	2,135
Pyongyang	16,900	17,420				34,320
	50,700	75,200				125,700
	255	125				380
Pyongnam	314,359	668,147				982,506
	443,087	2,912,416				3,355,493
	5,442	5,336				10,778
Haeju	310,120	346,300				656,420
	938,250	141,510				1,079,760
	4,750	2,005				6,755
Sindiju	342,268	190,454				592,722
	1,024,675	560,167				1,554,842
	4,719	1,712				6,431
Hamhung	75,107	122,506				197,613
	225,321	641,084				866,405
	1,193	680				1,873
Wonsan	109,963	434,455				544,418
	329,589	1,303,365				1,632,954
	1,661	4,846				6,507

<u>Section/kind</u>	<u>22</u>	<u>66</u>	<u>110</u>	<u>154</u>	<u>220</u>	<u>Total</u>
Ch'ongjin	113,400	74,200				187,600
	340,200	248,000				588,200
	1,679	619				2,298
Nampo	148,490	531,904				680,394
	490,664	1,967,835				2,445,439
	2,328	3,736				6,054
Tanch'on	367,648	54,210				878,858
	1,161,404	2,551,764				3,353,548
	6,165	3,402				9,567
Hwach'on				14,800		
				74,800		
				35		
Kanggye	278,186	231,642				509,801
	282,367	235,096				517,453
	4,486	2,147				6,527
Total	2,100,715	3,432,371	822,647	581,857	661,069	7,598,459
	5,799,379	10,351,415	3,077,810	3,075,500	1,701,309	24,005,413
	33,187	26,133	2,548	1,699	1,795	65,362

Transformer Facilities

November 1950

Statistics of Transformer Substations in North Korea

Item/Substation	220 KV No. Capacity	154 KV No. Capacity	110 KV No. Capacity	66 KV No. Capacity	44 KV No. Capacity	22 KV No. Capacity	11 KV No. Capacity	Total No. Capacity
North West Bureau	3 500,000	2 120,000		58 205,831		89 88,601	1 9,000	151 923,432
" (Home uses)				30 331,606	2 5,250	26 20,018	2 16,350	60 373,224
Total	3 500,000	2 120,000		86 537,437	2 5,250	115 108,619	3 25,350	211 1,296,656
North-East Bureau	1 100,000	1 15,000	3 139,500	55 164,108		82 81,826		142 500,434
" Home use	1 160,000		2 427,000			8 7,950		11 594,950
Total	2 260,000	1 15,000	5 566,500	55 164,108		90 89,776		153 1,095,384
Bureau Total	4 600,000	3 135,000	3 139,500	111 369,949		171 170,427	1 9,000	293 1,423,866
Home use Total	1 160,000		2 427,000	30 331,606	2 5,250	34 27,968	2 16,350	71 968,174
Grand Total	5 760,000	3 135,000	5 566,500	141 701,545	2 5,250	205 198,395	3 25,350	364 2,392,040

Transformer Substations (Before 25 June 1950)

Name of Substations	Output KVA	Capacity KVA	Voltage 1st 2nd 3rd	Connecting Method	Indoor Outdoor	Cooling Method	Phase	Frequency	Number Common Use Spare	Maker	Remarks
Inhŭngni	1,000	2,000	66 3.3	Δ-Δ	Outdoor	Self Cooling	1	60	3	1 Mitsubishi	
"	10,000	10,000	66 3.3	"	"	"	3	"	1	Maiden	
Nangnang	75,00	2500	66 22	"	"	"	1	"	3	1 Hidachi	
"	900	200	22 3.3	"	"	"	1	"	3	1 Hidachi	
East-Pyŏngnyang	12500	12500	66 11	"	"	"	3	"	1		
"	1500	600	66 "	"	"	"	1	"	3	1 Hidachi	
Imwŏn	1800	600	66 11 3.3	"	"	"	1	"	3	1 "	
Changchŭlli	1200	400	22 "	"	"	"	1	"	3	"	
Pyŏngchŭlli	6000	2000	22 "	"	Indoor	"	1	"	3	1 "	
Taetaeryŏng	1500	600	66 3.3	Δ-Δ	Outdoor	"	1	"	3		
Yusŏggni	4500	1500	11 "	"	Indoor	"	1	"	3	1 Shibaura	
Kosan	450	150	22 3.3	"	Outdoor	"	1	60	3	Shibaura	Shibaura
Chosŏn	1500	500	" "	"	"	"	1	"	3	1 Mitsubishi	Chemistry
Samsin	600	100	11 3.3	"	"	"	1	"	6	1 Fuji	Coal Mine
Kobangsan	1050	350	66 "	"	"	"	1	"	3	1 Osaka	"
"	600	200	11 "	"	"	"	1	"	3	U/S/A	"
Sadong	2100	700	66 "	"	"	"	1	"	3	1 Shibaura	
Sinŭiju (No.1)	6000	2000	22 "	"	"	"	1	50	3	1 Hidachi	
Sinŭiju (No.2)	4500	1500	" "	"	"	"	1	50	3	"	
South Sinŭiju	4500	1500	66 22	"	"	"	1	50	3	"	
"	1350	450	" 3.3	"	"	"	1	50	3	Fuji	
Sinŭiju Central	1500	5000	" "	"	"	"	1	"	3	Shibaura	
Uiju	2700	900	" "	"	"	"	1	"	3	"	
Ch'angpŏdong	696	400	22 3.3	V-V	Outdoor	"	1	50	2	Kitagawa	Use 60-
Yongampŏ	3000	1000	66 22	Δ-Δ	"	"	1	60	3	1 Shibaura	
"	900	300	22 3.3	"	"	"	1	"	3	1 "	
Yangsi	1500	500	22 3.3	"	"	"	1	60	3	Fuji	
Namsi	450	150	" "	"	"	"	1	"	3	Nishijima	
Kangbyŏlli	3000	3000	" "	"	"	"	3	"		Mitsubishi	Electric R/R

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor Indoor	Cooling Method	Phase	Frequency	Number		Maker	Remarks
			1st	2nd	3rd						Common use	Spare		
Wonsang	1050	350	22	3.3		Δ-Δ	Outdoor	Self cooling	1	50-60	3		Kitagawa	
Sonchon	2000	1000	66	22		"	"	"	3	60	1	1	Shibaura	
"	1500	500	"	"		"	"	"	1	"	3	1	Fuji	
"	1020	340	22	3.3		"	"	"	1	50-60	3			
Charyongwan	900	300	66	3.3		"	"	"	1	60	3		Shibaura	
Chaptong	7100	1500	"	22		"	"	"	1	"	5		"	
"	150	50	22	3.3		"	"	"	1	"	3		"	
Sokchu	2250	750	66	22		"	"	"	1	"	3	1	"	
"	1200	200	22	3.3		"	"	"	1	"	6	1	"	
"	300	100	"	"		"	"	"	1	"	3		"	
Chongsongjin	300	100	22	3.3		"	"	"	1	"	3		Osaka	
Sinsang	300	100	"	"		"	"	"	1	"	3		Shibaura	
Chongju	3460	2000	"	"		V-4	"	"	1	"	2		Mitsubishi	
Kilssang	300	100	"	"		Δ-Δ	"	"	1	10	3	1	Hidachi	
Koan	150	50	"	"		V-V	"	"	1	"	2		Osaka	
Yonghyon	300	100	"	"		"	"	"	1	"	3		Shibaura	
Kusong	300	100	"	"		"	"	"	1	"	3		Hidachi	
Unjon	600	200	"	"		"	"	"	1	"	3		Shibaura	
"	300	100	"	"		"	"	"	1	"	3		Hidachi	
Chongjiong	150	50	"	"		"	"	"	1	"	3		Fuji	
Mullye	381	220	"	"		V-v	"	"	1	"	2	1	Nagoya	Mining
Ungok	600	200	"	"		Δ-Δ	"	"	1	"	3		Nishijima	"
"	174	100	"	"		"	"	"	1	"	3		Hidachi	"
Ogung	750	250	"	"		"	"	"	1	"	3		Hidachi	"
Noyuri	1500	50	"	"		"	"	"	1	60	3		Shibaura	"
Chungdaeri	870	500	"	"		V-V	"	"	1	50-50	2		"	"
Kuam	435	250	"	"		"	"	"	1	60	2	1	Hidachi	"
Samsong	900	300	"	"		Δ-Δ	"	"	1	"	3	1	"	"
Sangdandong	693	200	"	"		V-V	"	"	1	50	4		Hidachi	"
Pusŏ	150	50	"	"		Δ-Δ	"	"	1	60	3		Shibaura	
Pusŏ	432	250	"	"		V-V	"	"	1	"	2		"	
Sanchŏn	300	100	"	"		Δ-Δ	"	"	1	"	3		"	"

Power Plant Facilities

November 1950

POWER PLANT FACILITIES

Name of Power Plant	Output	Motor Kind	(KW)	No.	Maker	Capacity	Generator Voltage	Rotation	No.	Maker	Capacity	Transformer 1st (V)	2nd (V)	No.	Maker
Changjin-gang Power Plant (No. 1)	144,000	Pelton	38,500	4	Chōmōpsa	40,000	10,000	160	4	Shibaura	40,000 7,500 5,000 300 150	10,500 10,500 10,500 11,000 11,000	110,000 11,000 11,000 3,450 210	5 1 1 3 4	Shibaura " Hidachi Shibaura "
Changjin-gang (No. 2)	106,300	Francis (Length)	33,800	4	"	31,100	11,000	600	4	"	45,000 60,000 5,000 300 150	10,500 10,500 10,500 10,500 10,500	110,000 154,000 3,450 3,450 210	3 4 1 3 4	" " Hidachi Shibaura "
Changjin-gang (No. 3)	42,000	Francis (Length)	14,500	3	"	15,500	11,000	300	3	"	15,500 300 150	10,500 11,000 11,000	110,000 3,450 210	3 1 2	" " "
Changjin-gang (No. 4)	34,200	Francis (Length)	15,000	3	"	13,500	11,000	360	3	"	18,000 300 150	10,500 22,000 11,000	110,000 3,450 210	4 2 2	" " "
Hōchōn-gang Power Plant (No. 1)	145,000	Pelton (breadth)	42,000	4	"	40,000	11,000	400	4	"	80,000 4,000 300 150	10,500 11,000 2,000 11,000	220,000 66,000 3,450 310	2 4 3 4	" Fuji Osaka Shibaura
Hōchōn-gang (No. 2)	69,800	Francis (Length)	22,000	4	"	20,000	11,000	514	4	"	40,000 200 150	10,500 22,000 11,000	220,000 3,450 210	2 3 4	" " "
Hōchōn-gang (No. 3)	58,000	Francis (Length)	14,500	4	"	18,500	11,000	400	4	"	40,000 37,000 22,000 300 150	10,500 110,500 22,000 (11,000) 11,000	220,000 114,000 3,450 210	1 2 3 2	" " " "
Hōchōn-gang (No. 4)	66,000	Francis (Length)	21,000	4	"	20,000	11,000	400	4	"	40,000 3,000 300 150	10,500 11,000 11,000 11,000	110,000 66,000 3,450 210	2 4 1 3	" " " "
Supung Power Plant	400,000	Francis (Length)	105,000	2	Chōnōpsa	100,000 50/60 6,000	16,500	125/150	2	Shibaura	100,000	16,500	230,000	2	Shibaura
			105,000	2	"	100,000	16,500	150	2	"	100,000 100,000 60,000 1,500 700 600	16,500 16,500 16,500 16,500 16,500 16,500	230,000 230,000 69,000 3,450 3,450 210	2 1 3 4 4 5	" " " " " "
Puchōn-gang Power Plant (No. 1)	129,600	Pelton (breadth)	45,000	4	Hoit	36,000	11,000	360	v4	Seameans	36,000 4,000 350 150	11,000 11,000 11,000 11,000	110,000 66,000 3,300 210	5 3 3 4	" " Mitsubishi "
Puchōn-gang Power Plant (No. 2)	41,900	Pelton (Breadth)	31,000	2	Chōnōpsa	23,000	11,000	450	2	Shibaura	23,000 100 150	11,000 11,000 11,000	110,000 3,300 210	3 3 3	Shibaura Mitsubishi Shibaura
Puchōn-gang Power Plant (No. 3)	18,000	Pelton (breadth)	27,000	1	"	23,000	11,000	279	1	"	6,666 110 150	11,000 11,000 11,000	110,000 3,300 210	4 3 1	Mitsubishi Shibaura "
Puchōn-gang Power Plant (No. 4)	11,700	Pelton (breadth)	9,000	2	"	6,500	11,000	257	2	"	4,333 500 50 50	11,000 11,000 11,000 11,000	67,500 22,000 22,000 210	4 4 3 3	" Osaka " Shibaura
Puryōng Power Plant (No. 1)	13,400	Pelton (breadth)	2,609	2	Hidachi	8,600	6,600	400	2	Hitachi	5,733	6,300	66,000	3	Hidachi
" (No. 2)	9,400	Francis (Length)	5,334	2	"	6,000	6,600	720	2	"					
" (No. 3)	5,200	"	2,939	2	"	3,300	6,600	720	2	"	2,200	6,300	66,000 154,000	3	Hidachi
Hwachōn Power Plant	81,000	"	30,000	3	"	30,000	11,000	200	3	"	30,000 30,000	10,500 10,500	3,450 154,000 66,000	1 1	" "

(6)

Curvelines
of
Water Capacity
at
Each Reservoir

25X1

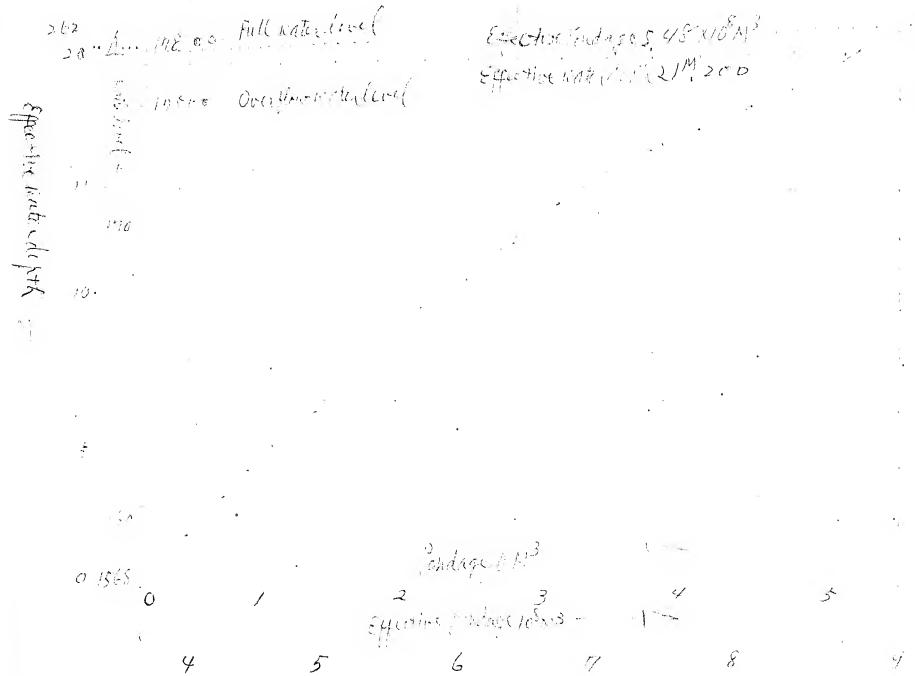
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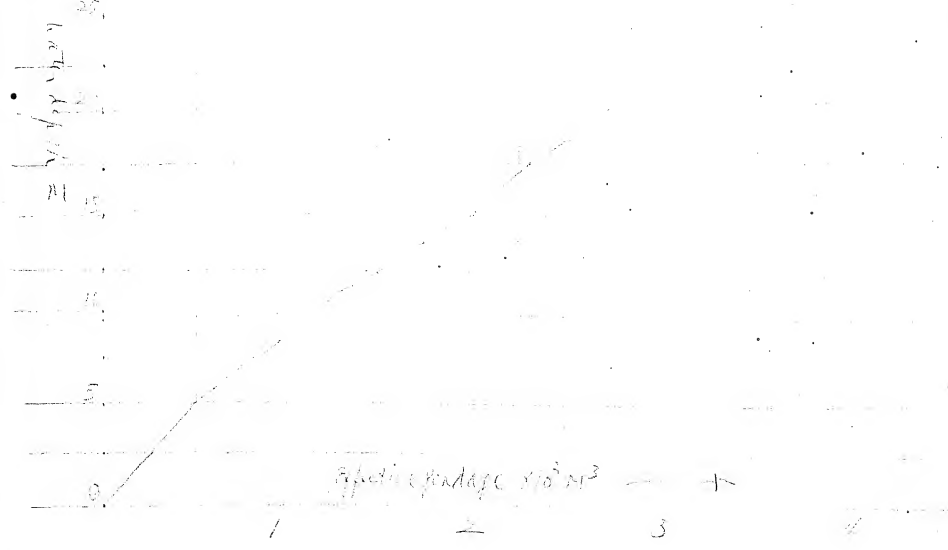
25

150

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Effective pondage $10^6 M^3$



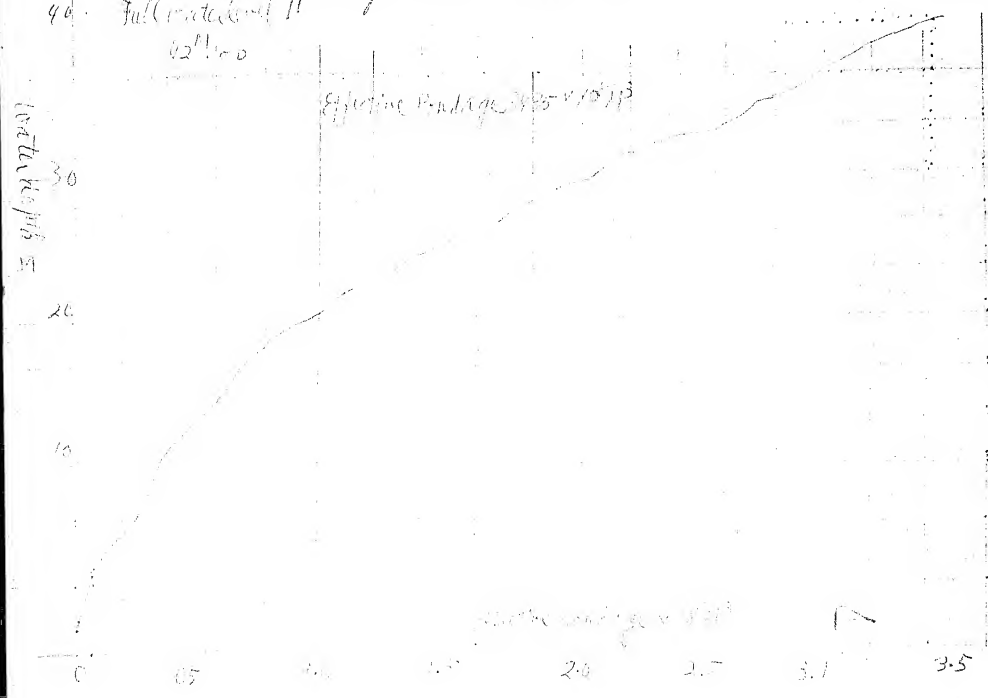
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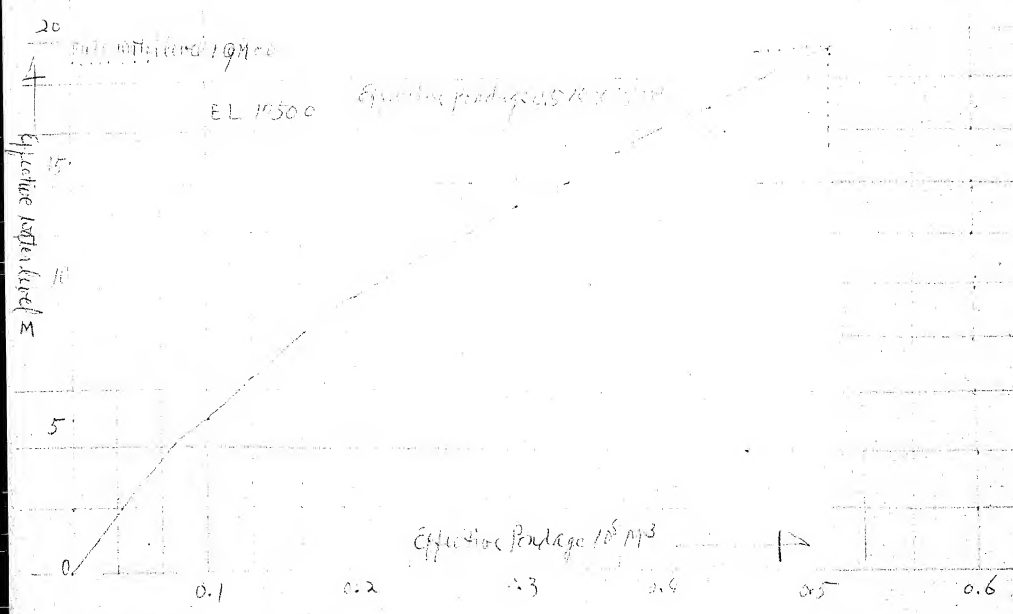
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Full water level Hoangsuwon Reservoir
02/11/00

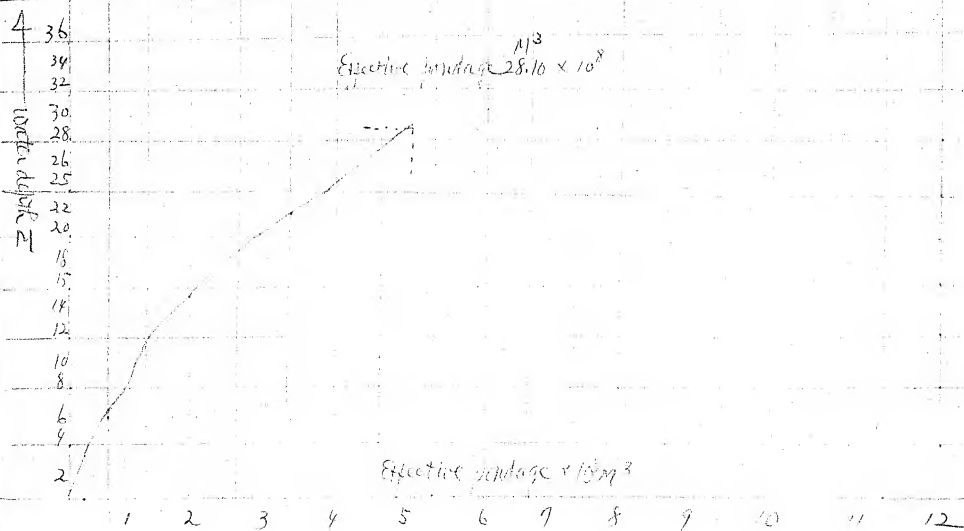


Pungyang Reservoir

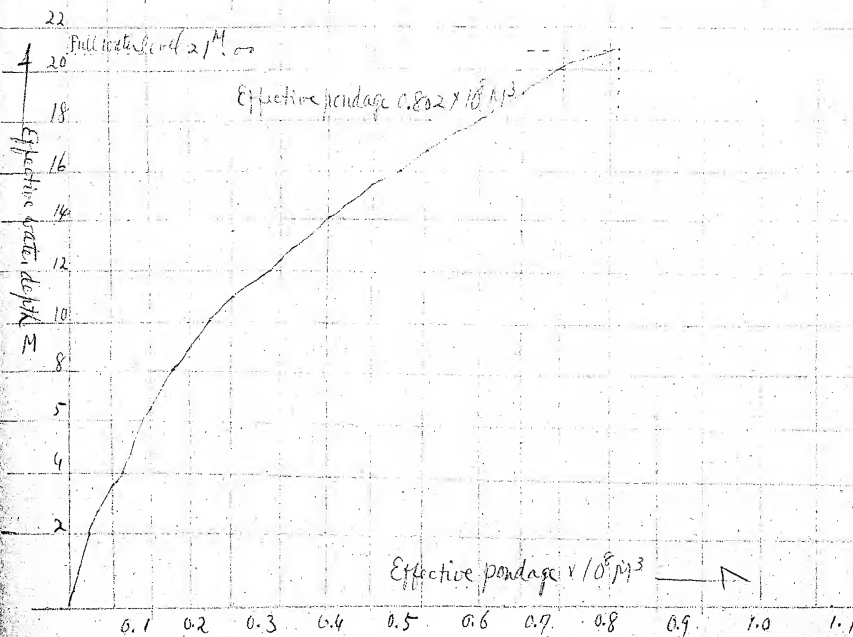


Tongnogang Reservoir

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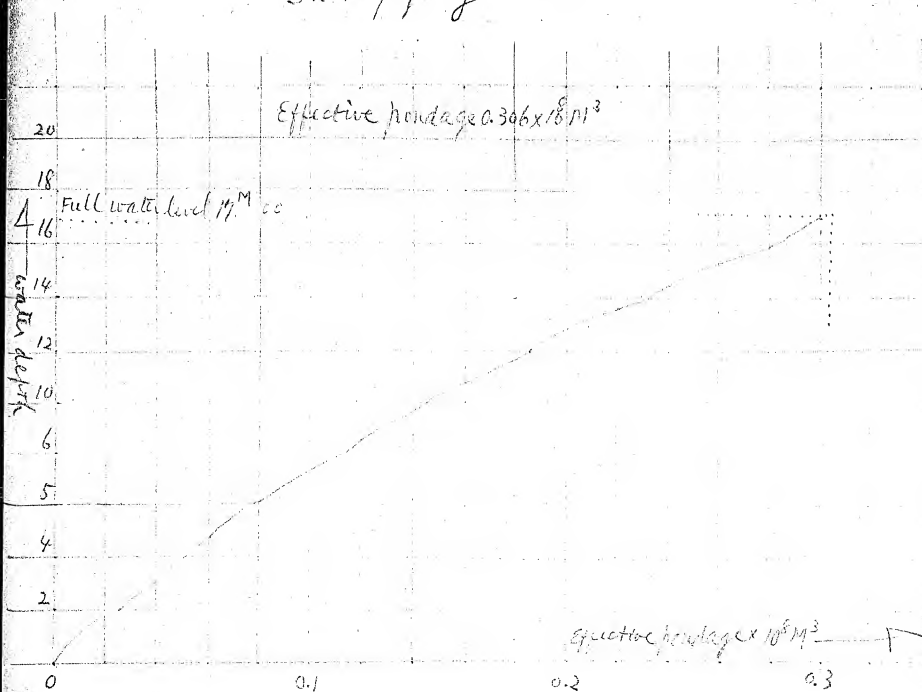


Maejungni Reservoir

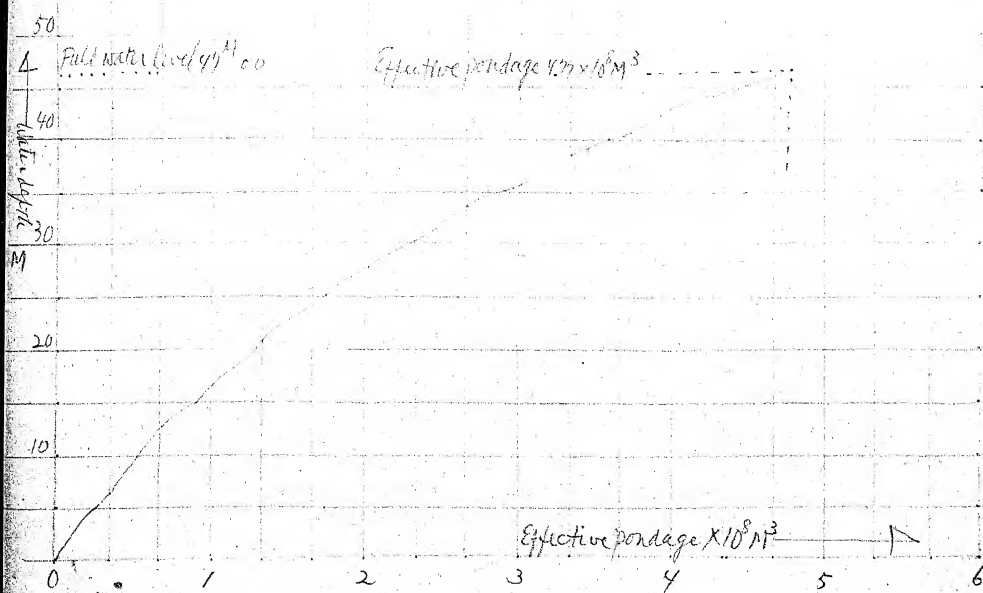


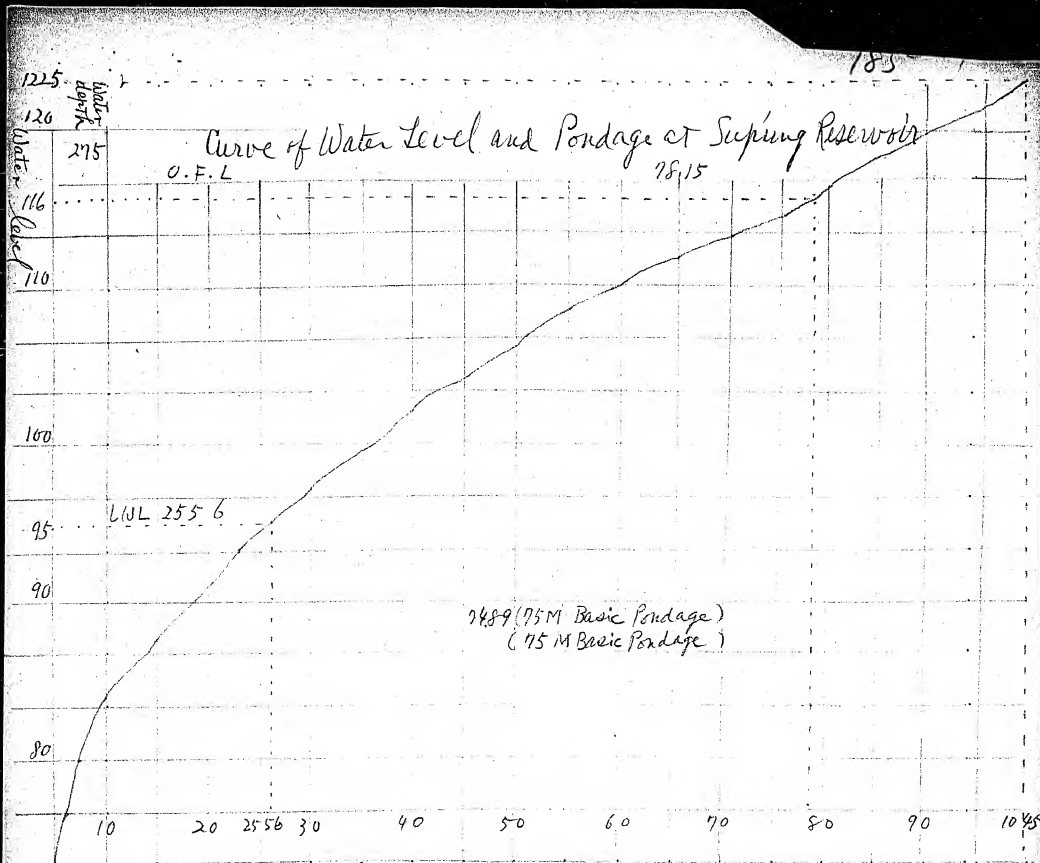
Sachopyong Reservoir

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Yandupiyong Reservoir





Items for Reference

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Actual Results of Production
in North Korea (16 November 1950)

(1) Electricity

Name of Factories	Name of Articles	Unit	Plan for February	Production in February	Plan for March	Production in March	Remarks
Kangso Electric machine Works	2nd Class Wire	Φ	38	36,510	38,000	33,250	
	4th Class Wire	"	4	0	6,000	0	
	Uncoated electric wire	"	150,200	59,600	106,100	63,695	

(2) Coal

Koji Coal Mine	Bituminous Coal	Φ	39,000,000	31,613	42,000	23,384	
Kogonwon "	"	"	9,500	7,787	12,500	12,685	
Anju "	"	"	21,000	21,308	23,200	24,230	
Sinchang "	Anthracite Coal	"	34,000	37,624	41,000	46,340	
Kaechon "	"	"	30,500	20,327	34,000	19,063	
Sinyuson "	Bituminous Coal	"	7,000	6,000	8,500	8,656	
Kungsim "	"	"	19,000	13,605	22,000	15,234	
Yongmun "	Anthracite Coal	"	18,000	12,952	17,600	15,419	
" "	B lump coal	"	1,600	870	1,800	1,545	
Yongdung "	"	"	3,000	2,163	4,000	4,041	
"	Anthracite Coal	"	11,500	12,995	10,000	13,371	
Tokchon "	"	"	19,500	19,535	21,500	21,580	
Hungnyong "	"	"	21,000	21,462	24,000	25,125	
Kangdong "	"	"	11,100	8,077	11,800	8,000	
Samsin "	"	"	10,700	15,672	16,000	18,484	
Sedong Factory	"	"	5,300	18,807	17,200	19,715	
"	Briquettes	"	17,400	6,248	5,900	6,093	

(3) Colored Metal Ores

187

Hamhung Mine	Crude ore	\$	21,710	21,186	21,710	30,104	incl. Cu, Au, Zn
"	Concentrate	"	2,550	2,588	2,560	3,564	
Holtong "	Crude ore	"	20,040	6,876	20,040	12,724	
"	Concentrate	"	1,160	1,445	1,170	399.18	
"	High-grade ore	"	2,600	9,152	2,700	992	
Suan "	Crude copper	"	18,937.8	10,529.3	18,978	17,605.2	
"	Copper concentra- te	"	990	653.9	990	1,124.067	
"	Crude molybdenum	"	4,590	2,272	4,590	3,286	
"	Molybdenum concentrate	"	190	0	17	72	
"	High-grade ore	"	190	0	190	0	
Kondok "	Crude lead	"	11,086	10,615	11,469	13,470	
"	Lead concentra- te	"	570	459	570	629	
"	Zinc concentra- te	"	2,900	2,642	3,000	3,516	
Taeyudong "	Crude ore	"	12,087	5,604	16,117	7,145	
"	Concentrate	"	1,000	513 ⁷	2,000	957 ⁷⁵²	
Koksai "	Tungsten	"	200	160	300	187 ⁵⁶³	
Hwajung "	Crude ore	"	1,166	669	1,069	1,102 ⁴²	
"	Concentrate	"	170	171 ²	170	315 ⁰⁷	
Huekang "	Crude ore	"	—	—	5,643	79 ³⁵	
"	"	"	280	253 ³	290	381 ⁵	

(4) Black metal ores

188

Tanek'on Mine	Iron sulphide	£	19,100	19,495	19,200	29,166
"	Ore dust	"	-	-	-	22,363
Hasong "	Brown iron lump ore	"	13,000	12,692	14,000	16,452
"	Brown iron Ore dust	"	9,000	22,275	9,000	11,965
Chaeryong "	Brown iron ore	"	6,000	6,544	6,400	10,020
Chondong "	Iron ore	"	15,000	15,491 ⁹	16,000	19,756 ⁹
Changdo "	Iron sulphide	"	15,491 ⁹	16,000	6,000	
Kaecheon "	Earth graphite	"	3,680	3,742	3,794	3,872

(5) Metal

Hwanghae Iron Mill	Pig iron	£	20,200	17,205	22,400	19,165
"	Cokes	"	19,400	16,419	20,600	20,862
"	Steel ingot	"	16,200	9,512	12,400	11,092
"	Rails	"	-	-	-	-
"	Square steel	"	0	833	0	293
"	Special spurt	"	500	238	0	399
"	Ungr steel	"	2500	904	500	3292
"	Thick plate	"	5950	5432	6,000	5445
"	Thin plate	"	580	102	480	1208 ⁶²
"	Tar	"	740	850	816	1021
"	Pitch	"	360	423	395	493
"	Galvanized sheet iron	"	145	64	225	150
"	Sodium sulphate	"	200	387	225	248
"	Round Saw	"	310	372	540	332

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Songjin	Iron Mill	Steel ingot	£	4660	3455	5170	4563 ⁹⁸
		Fe - W	"	150	54	165	75 ³⁰⁸
		Fe - Mn	"	6	13	7	4 ¹¹
		Steel rod	"	610	210	670	464 ¹¹²
		Hollow steel tube	"	15	48	60	64 ⁵⁰²
		Medium size steel plate	"	800	105	900	1085 ⁷⁰
		Thin plate	"	335	251	390	311 ²⁵
		Silicon steel plate	"	68	29	119	104 ²
		High speed steel	"	60	260	140	229 ³²
		Coal dust steel	"	750	464	600	1287 ³⁸⁶
		Iron wire	"	10	38	22	27 ⁴⁴
		Fluoride	"	765	187	405	330 ⁴⁷⁵

Kangson	Steel Mill	Steel ingot	"	2200	1215	2400	1873 ⁴⁰⁰
		Blooming	"	2480	1263	2760	2160 ⁵⁷⁸
		Steel ingot	"	2200	1215	2400	1873 ⁴⁰⁰
		Roller	"	50	90	50	22 ³
		Medium size steel plate	"	1100	797	1200	1470 ²⁵⁵
		Miniature steel plate	"	1100	418	1175	294 ⁵⁴⁷
		Silicon iron	"	39	44	43	76 ⁶⁴⁶
		Fe - Mn	"	85	113	45	106 ⁸³⁶

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Chongjin						
Steel mill	Granulated iron	2,640	2,705	2,730	3,241	
"	Steel ingot	-	389	-	415	
"	coke	19,670	10,488	19,340	13,598 ²	
"	Flux	374	287	415	211	
"	Hotell	950	347	235	434	
"	Sodium sulphate	308		308	248 ⁵	

Hampho						
Refinery	Grade steel	350	238	399	275 ²¹	
"	Electrolytic zinc	700	544	550	527 ²²	
"	Zinc oxide paint	60	36 ⁵	50	58 ¹	
"	Sodium carbonate	50	55 ²	50	75 ²²	
"	Calcium	35	5 ²	5	42 ²⁵	

Hungnam						
Refinery	Electrolytic copper	300	248	300	201 ²²	
"	Electrolytic lead	300	302 ²¹	300	220 ²⁰	
"	Sodium sulphate	30	36 ¹²	40	51 ²	
"	Electrolytic silver	1,078	1,438 ⁴⁰³	1,253	1,263 ²²⁵	
"	Grade gold	497	256 ¹³⁵	527	387 ⁴⁵³	

(91)

Munpyong Refinery	Candle lead	7	415	434	1,194	783
"	Auto lead	1	300	400	218	632 ⁷⁰³
"	Candle gas	2	35	51	25	46 ²³
"	Auto gas	2	1,519	1,120	1,234	2,207 ^{1,120}
"	Auto gas	2	58	42	51	57 ²
"	Auto gas	2	2.2	2	2	2.2

Munpyong Refinery

Auto gas	2	2.2	2	2	2
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Munpyong Refinery

Munpyong Refinery	Auto gas	2	2.2	2	2
"	Auto gas	2	2.2	2	2
"	Auto gas	2	2.2	2	2
"	Auto gas	2	2.2	2	2
"	Auto gas	2	2.2	2	2
"	Auto gas	2	2.2	2	2

Central

Machine Factory	Auto gas	7	59.40	1	62.05
"	Auto gas	2	13.2	1	60.47

Haeju Machine Factory

Auto gas	0.5	0.6	0	77	500
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"

Auto gas	70	0	40	0
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192

Manchon Machine Factory	Hoisting machine	12	-	15	25%	100%
		22	0	25	0	25%
		12	0.3	0.9	0	50%
	Roller	12	0.5	0.5	12%	
	Roller	45	1	5	0.5%	
	Electric machine	12	0.5	0.5	2.29%	

Peking Machine Factory	Hoisting machine	2	3	4	0.46%	
	Roller	3	0.7	4	0.9%	
	Roller	3	2.2	6	0.42%	

Nanking Machine Factory	Roller	325	325	325	12.4%	
	Roller	15	0	15	100%	
	Roller	1,500	1,520	1,500	18%	
	Roller	1,500	1,512	1,500	88%	
	Roller	200	0	200	20%	

Pingyang Farm Machine Factory	Roller	400	160	0	"	
	Roller	1,000	281	3,000	12.28%	
	Electric fan	200	-	3,000	80.69%	
	Roller	500	100	500	100%	

Wonsan Shipyard	Steam engine	6.3	0.13	0.5	0.52	193
	Rubber boat	10	5.25	6	0.43	
	File driver	0.6	-	1.3	3.10	

Hongwon Machine	Rubber roller	0	3	0.50	
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	Tractor	-	-	-	0.34	100 lbs
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		-	-	-	-	100 lbs
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		-	-	-	0.10	300 lbs
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(7) Chemicals

Hongnam Fertilizer	Ammonium sulfate	29,510	28,929	25,500	32,109
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	Ammonium phosphate	1,200	1,412	1,200	1,416
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	Ammonia	6,536	8,036	7,515	9,050
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	Glycerine	53	45	58	65
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	Toilet soap	990	672	1,050	1,304
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	Toilet soap	70	28.5	28	103
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	Concentrated sulphuric acid	998	1,200	1,200	1,201
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	Sulfate Sulphuric acid	20,150	23,543	22,200	28,153
--	------------------------	--------	--------	--------	--------

	Isotatin chloride	98	101	98	139
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	Isotatin chloride	312	345	348	320
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Pengung Chemical Factory	Carbide	£	1588	9226	2406	11,703
"	Coal nitrogen	"	1080	2296 ²	2150	3,641
"	"	"	110	128	120	142
"	Salt rock	"	696	726 ³	547	919
"	Liquid chlorine	"	81	81 ⁵	38	59
"	Sodium hypochlorite	"	840	841 ⁵	710	922
"	Sodium carbonate	"	840	859	895	126
"	Methylol	rel	340	325 ²	350	359
"	Acetic acid	£	25	25 ³	30	39
"	Acetone	"	23	39 ²	26	45
"	Dum (and)		38000	3184	22510	35872

Hing Nam

Gunpowder
Factory

"	Synthetic	£	927	0	245	498.2
"	Fuse	Km	2440	2103	2680	3610
"	Anticorrosion paint		245	80 ⁵⁰	200	
"	Concentrated nitric acid	£	289	1291 ⁴⁶	315	255 ²
"	Ammonium nitrate		1126	3029	1240	1387 ²

Publication
stopped
(Secret)Sun Chien
Chemical
Factory

"	Carbide	"	1550	1717 ³	1700	1912
"	Calcium cyanamide	"	1070	1150 ⁶	1050	1419

(8) Building Materials

Singhori Cement Factory	Cement	₹	16,000	16,454	20,142	13,187	196
Hacpe Cement Factory	"	"	9,500	7,564	9,200	12,485	
Madang Cement Factory	"	"	7,500	7,000	10,030	10,048	
Chamari Cement Factory	"	"	11,000	11,414	12,500	14,245	
Kanur Cement Factory	"	"	3,500	2,925	1,500	1,212	
Nampal Metal Factory	Gate posts	"	500	0	0	46	100
Binitia							
Topilashin	Water pump	kg	16,000	12,454	17,000	19,257	
"	Hand saws	set	10,000	2,000	2,300	2,000	
"	Hand saws	set	10,000	2,000	2,300	2,000	
"	Hand saws	set	10,000	2,000	2,300	2,000	Planting mill
Sinaija Paper mill	Hand paper	lb	504	221.2	287	313.2	
"	Hand paper	"	20	10	15	20	
"	Tissue paper	"	15	15.3	15	23.24	
Sinaija							
Pulp mill	Rock pulp	"	272	352.2	296	444	319 B.O. Class
"	Craft paper	"	40	52.5	43	57	016
"	Drawing paper	"	172	178.3	188	208	843
"	Toilet paper	"	110	248.2	125	258	76

797

Suriwon						
Textile Mill	Wooling	m	324,083	31,889	324,084	212,9172
"	Twill	m	169,416	122,889	169,417	157,433
"	Overalls	unit	2,833	6,267	2,834	2,850
"	Cotton, serge	m	3,150	7,933	5,780	4,532
"	Blanket	m	1,000	1,324	6,315	1,157
"	Cotton yarn	Kg	83,100	89,102	84,100	22,587

Chung jin						
Textile mill	Wool	g	125	125	125	100
"	Concentrated Sodium sulphate	"	333	101	334	208

Kilcheu						
Pulp Mill	Wagon pulp	"	400	205	600	334
"	Foreign paper	"	414	435	627	575

Pyeong ang						
Chemical Factory	Staple fibre	"	10	146	115	105
"	Sodium sulphate	"	592	637	210	726
"	Carbon bisulphate	"	45	85	77	106
"	Anhydrous sodium sulphate	"	50	0	20	87

Pyeongyang						
Corn Products Factory	Edible dextrin	"	1,300	1,405	1,600	6,477
"	Maltodextrin	"	60	274	45	201

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Pyeongyang Silk Textile mill	Silk goods	M	21,000	11,145		
"	Decorative clothing material woven	M	10,000	5,669	24,040	34,842
"	Silk towels	M	32,500	15,657	25-10	29,576
"	Woolen gauze	M	5,000	2,544	10,000	10,000
"	Raw silk	kg	6,700	5,683	6,600	6,357
"	Twist yarn	"	125	632	125	662

Changjin Oil Press	Soybean oil	lb	420	683	520	503
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Manpo Oil Press	Cottonseed oil	"	60	64	60	74
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Sinuiju Oil Press	Soybean oil	lb	233	224	283	312
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Manpo Silk Textile Mill	Figured lawn	M	15,500	4,661	0	165
"	Figured silk	"	10,495	5,531	0	487
"	Figured satin	"	15,500	4,661	0	365
"	Silk towels	"	59,375	22,029	0	1037
"	Rayon towels	"	10,000	2,040	59,710	29,591
"	Rayon plain tissue	"	20,000	6,067	112,090	54,025

7

Chart of
Transmission Lines

1947

as of 31 December

Office of Electricity,
Bureau of Industry

Contents

Statistics of Power Transmission Lines

1. Statistics of transmission lines under the control of the Office of Electricity

Statistics of transmission lines under the control of

The North West Distributing Division
 The North East Distributing Division
 The Pyöngyang Transmitting Division
 The Höchöngang Power Generating Division
 The Changjingang Power Generating Division
 The Pujöngang Power Generating Division
 The Central Bureau of Electrical Industry

2. Specifications of Lines

Specifications of 220 KV transmission lines1			
"	154 KV	"	1.3
"	110 KV	"	3
"	66 KV	"	5.7 11, 13, 15, 17
"	44 KV	"	11
"	22 KV	"	19
"	11 KV	"	39
"	35 KV	"	39

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290

Power Transmission Lines under the control of
the office of Electricity

Kind	By Voltages (KV)							Remarks
	"	22	44	66	110	154	220	Total
Elevated line	47	258,136	16,110	5,999,976	592,549	377,001	139,096	298,619
Underground		83						83
Total	47	262,436	16,210	5,270,976	592,549	377,001	139,096	298,702
Line length	19.1	51,588	12,210	2,744,346.4	875,320.9	2,000,000.0	2,000,000.0	2,000,000.0
Underground		12.7						12.7
Total	19.1	65,156.8	12,210	2,744,346.4	875,320.9	2,000,000.0	2,000,000.0	2,000,000.0
Single pole	58	1,000	296	200				2,496
Double pole	18	9,994	19	1,753				11,766
Line poles		58		312				370
Iron towers	2	30		2,001	2,401	1,763	1,075	6,570
Permanent	1	602						602
Total	73	12,476	319	2,745	2,401	1,763	1,075	15,271

Power Transmission Lines under the control of
the North West Distributing Division

Kind	By Voltages (KV)							Remarks
	"	22	44	66	110	154	220	Total
Elevated line	47	1,001,600	100,000	2,000,000				2,000,000
Underground		1,000						1,000
Total	47	1,003,100	100,000	2,000,000				2,000,000
Line length	19.1	1,100,000	1,000	1,000				1,000
Underground		1,000						1,000
Total	19.1	1,100,000	1,000	1,000				1,000
Single pole	58	1,300		20				1,320
Double pole	18	2,000		1,000				3,000
Line poles		58		312				370
Iron towers	2	30		2,001	2,401	1,763	1,075	6,570
Permanent	1	602						602
Total	73	16,360	319	17,605				34,284

Power Transmission Lines under the control of
The Indragang Power Generating Division

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201

Kind	By Voltages KV						Total	Remarks
	11	22	44	66	110	154	220	
Elevated line				98.3	150.8			149.1
Underground								
Total				98.3	150.8			149.1
Elevated line				105	108.2			108.2
Underground								
Total				105	108.2			108.2
Single pole				303	13			316
Double pole								
Open pole					660			660
Open tower								
Total				303	673			976

Power Transmission Lines under the control of
The Central Bureau of Electrical Industry

Kind	By Voltages KV						Total	Remarks
	11	22	44	66	110	154	220	
Elevated line		222.51		269.36		11.8		503.94
Underground								
Total		222.51		269.36		11.8		503.94
Elevated line		15.97		337.27		70.8		484.04
Underground								
Total		15.97		337.27		70.8		424.04
Single pole								
Double pole		1254						1254
Open pole		1562		135				1697
Open tower								
Open tower		66		111		35		112
Open tower								
Total		2902		2104		35		5041

271
202Power Transmission Lines under the control of
the North-East Districting Division

Kind	By Voltages (KV)							Total	Remarks
	3.5	22	44	66	110	220			
Transmission line	959	80,650		155,715				406,243	
Substation		218						218	
Total	959	80,868		155,715				406,461	
Transmission line	2,128	2,849,000		2,128				5,005,128	
Substation		1						1	
Total	2,128	2,849,001		2,128				5,005,129	
Transmission line	112	1,112						2,224	
Substation		2,953						2,953	
Transmission line		1						1	
Substation		6						6	
Total	215	3,022						3,237	

Power Transmission Lines under the control of
the Hingwang Districting Division

Kind	By Voltages (KV)							Total	Remarks
	22	22	44	66	110	220			
Transmission line					1,465	1,465		2,930	
Substation									
Total					1,465	1,465		2,930	
Transmission line					2,128	1,112		3,240	
Substation									
Total					2,128	1,112		3,240	
Transmission line									
Substation									
Total									
Transmission line					1,370	1,370		2,740	
Substation									
Total					1,370	1,370		2,740	

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203

Power Transmission Lines under the control of
the Engineering and Planning Division

Kind		By Voltage (KV)						Total	
11		22	44	66	110	154	220		
Line elevation line underground		24,249		49,716	415,416		385,523	155,953	
	Total	24,249		49,716	415,416		385,523	155,953	
Line elevation line underground		22,822		41,716	345,416		302,523	125,149	
	Total	22,822		41,716	345,416		302,523	125,149	
Line elevation line underground		12,822		21,716	145,416		102,523	45,149	
	Total	12,822		21,716	145,416		102,523	45,149	
Line elevation line underground		8		15	10		10	10	
	Total	8		15	10		10	10	
Line elevation line underground		2,822		5,716	35,416		25,523	10,149	
	Total	2,822		5,716	35,416		25,523	10,149	
Line elevation line underground		2,822		5,716	35,416		25,523	10,149	
	Total	2,822		5,716	35,416		25,523	10,149	

Power Transmission Lines under the control of
the Engineering and Planning Division

Kind		By Voltage (KV)						Total	
11		22	44	66	110	154	220		
Line elevation line underground		24,249		49,716	415,416		385,523	155,953	
	Total	24,249		49,716	415,416		385,523	155,953	
Line elevation line underground		22,822		41,716	345,416		302,523	125,149	
	Total	22,822		41,716	345,416		302,523	125,149	
Line elevation line underground		12,822		21,716	145,416		102,523	45,149	
	Total	12,822		21,716	145,416		102,523	45,149	
Line elevation line underground		8		15	10		10	10	
	Total	8		15	10		10	10	
Line elevation line underground		2,822		5,716	35,416		25,523	10,149	
	Total	2,822		5,716	35,416		25,523	10,149	
Line elevation line underground		2,822		5,716	35,416		25,523	10,149	
	Total	2,822		5,716	35,416		25,523	10,149	

154 KV

[illegible]

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Suspension Insulator Serial Number - Proof - Suspension	Elevated and Underground Wires (Mile) Kind Thickness	Safety Facilities (Mile) Kind Thickness	Sanitation Facilities (Mile) Kind Thickness	Medical Contact Point Location Kind Mile Kilometer	Date of Construction	Chart of Station Location Chart of Station Location Chart of Station Location
16 16 10000 Japan Insulator Order Insulator	ST 7/40 2 2 175	Order 22 Junk 4	Order 22 Junk 4	Order 22 Junk 4	Order 22 Junk 4	Order 22 Junk 4
16 16 2102 Japan Insulator	ST 7/40 2 2 31.3	Order 32 Junk 4	Order 32 Junk 4	Order 32 Junk 4	Order 32 Junk 4	Order 32 Junk 4
16 16 9-04 Japan Insulator	ST 7/40 2 2 4.5	Order 32 Junk 4	Order 32 Junk 4	Order 32 Junk 4	Order 32 Junk 4	Order 32 Junk 4
16 16 5800 Japan Insulator	ST 7/40 2 2 69.25	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4
16 16 5700 Japan Insulator	ST 7/40 2 2 33.2	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4
16 16 6000 Japan Insulator	ST 7/40 2 2 25.8	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4
16 16 6000 Japan Insulator	ST 7/40 2 2 25.8	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4
10 12 9380 Japan Insulator	ST 7/35 1 2 21.8	Order 22 Junk 4	Order 22 Junk 4	Order 22 Junk 4	Order 22 Junk 4	Order 22 Junk 4
10 12 8366 Japan Insulator	ST 7/35 1 3 20.8	Order 22 Junk 4	Order 22 Junk 4	Order 22 Junk 4	Order 22 Junk 4	Order 22 Junk 4
10 12 7432 Japan Insulator	ST 7/35 1 2 19.1	Order 32 Junk 4	Order 32 Junk 4	Order 32 Junk 4	Order 32 Junk 4	Order 32 Junk 4
10 12 11614 Japan Insulator	ST 7/35 1 2 70.2	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4	Order 4 Junk 4

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208

Province	Section	Name of Transmission Line	Name of Circuit	No. of Poles	No. of Cross-arms	Electric Wire Kind	Extent (km)	No. of Cables	Thickness (mm)	Distance between poles (m)	Supporting Poles				Location
											Standard	Height (m)	Number	Basic Number	
Huanggang	Huanggang	Huanggang	Huanggang	2	116	60 ST 25.44 AL 21.14	68	214	250	33	7	700	-	-	-
				Total				12644	956			759			
				3	110	60 ST 22.44 AL 21.14	6	304	250	270	365	242	-	-	-
				2	110	60 ST 15.9	6	34	250	34	54	-	-	-	
				2	110	60 ST 15.9	6	53	250	34	105	-	-	-	
				2	110	60 ST 25.44 AL 21.14	6	34	250	34	105	-	-	-	
				2	110	60 ST 25.44 AL 21.14	6	34	250	34	105	-	-	-	
				2	110	60 ST 25.44 AL 21.14	6	34	250	34	105	-	-	-	
				2	110	60 ST 25.44 AL 21.14	6	34	250	34	105	-	-	-	
				2	110	60 ST 25.44 AL 21.14	6	34	250	34	105	-	-	-	
Total				1536			2062	54			630			13	
Huanggang	Huanggang	Huanggang	Huanggang	2	110	60 ST 25.44 AL 21.14	68	214	250	33	7	700	-	-	-
				2	110	60 ST 25.44 AL 21.14	68	214	250	33	7	700	-	-	-
				2	110	60 ST 25.44 AL 21.14	68	214	250	33	7	700	-	-	-
				2	110	60 ST 25.44 AL 21.14	68	214	250	33	7	700	-	-	-
				2	110	60 ST 25.44 AL 21.14	68	214	250	33	7	700	-	-	-
				2	110	60 ST 25.44 AL 21.14	68	214	250	33	7	700	-	-	-
				2	110	60 ST 25.44 AL 21.14	68	214	250	33	7	700	-	-	-
				2	110	60 ST 25.44 AL 21.14	68	214	250	33	7	700	-	-	-
				2	110	60 ST 25.44 AL 21.14	68	214	250	33	7	700	-	-	-
				2	110	60 ST 25.44 AL 21.14	68	214	250	33	7	700	-	-	-
Total				312			1845	54			1067			54	

66 KV

9/1/49	10.65	7.35	7	104
10/1/49				
11/1/49				
12/1/49				
1/1/50				
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4/1/58				

[illegible]

211
301

Suspension Insulator	Plated and Ground wire	Supply Transmission No. of conductors	Kind and section of conductor	Location	Kind of contact	Notes
Serial number	Kind	No. of conductors	Kind	Location	Kind of contact	Notes

7	23663					
4	5 1597	2	1.5 " 4			2
4	5 249	2	1.5 " 4			2
4	5 158	2	1.5 " 4			2
4	5 30	2	1.5 " 4			2
4	5 655	2	3.2 " 4			1736
4	5 235	2	4.4 " 4			1939
4	5 1636	1	1.5 " 4			2.5
4	5 590	2				2
4	5	1	4 " 4			1946 12 2
4	5 200	1	22.9 " 4			1939 2.2
4	5 150	1				2.5
4	5 185	986	4			1939 2.2 12

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303
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213

Suspension Insulator Serial number	Tale number	Kind	Elevated and ground wire (mm)	Safety Transmission Circuit (mm)	Telephone Line (mm)	Kind and section of cable	No. of Sockets	Neutral Contact Point Location	Kind Gm KVA	Date of Installation	Remarks
4	5 6730	-	-	-	55	4	-	-	-	1938	1.8
4	5 1110	-	-	-	10.7	4	-	-	-	1938	2.2
11	5 11850	ST	7/2.6	1	111.2	4	-	6 Juyongni Substation	2512	1938	2.6
4	5 11845	"	-	-	26.5	4.5	-	2	-	1940	2.6
4	5 1200	"	-	-	15	4	-	-	-	1943	2.2
4	5 319	ST	7/2.6	1	142	4	-	-	-	1940	2.6
4	5 1531	"	-	-	4.6	4	-	-	-	1939	2.6
4	5 123	"	-	-	-	-	2	-	-	1938	2.6
4	5 14438	ST	7/2.6	1	56.3	4	-	2	-	1935	2.1
4	5 3388	ST	7/2.6	1	54	4	-	4ayin Substation	1600	1935	2.1
4	5 10014	ST	7/2.6	1	50.3	4	-	-	-	1936	2.1
4	5 7104	ST	7/2.6	1	25	4	-	-	-	1936	1.8
4	5 342	ST	7/2.6	1	3.5	4	-	-	-	1936	12
4	5 7585	ST	7/2.6	1	935	4	-	3 Kyejong	1100	1937	2.1
4	5 1048	-	-	-	26.3	4	-	-	-	1936	2
4	5 456	ST	7/2.6	1	4	4	-	-	-	1936	1.7
4	5	ST	7/2.6	1	-	-	-	-	-	1943	2.6

214
304

District	Name of line	Section	No. of lines	Circuit	No. of poles	Type of wire	Kind	No. of conductors	G.C.D.	Kilohms	Meters	Feet	Meters	Feet	Supporting poles		Remarks
															Standard	Iron tower	
Pyawgyi	Pyawgyi Sub.		2	66	60	Copper	7/2.6	6	34,388	38	200	16	277	Xo	-	-	-
"	"	Nampho Sub.	2	66	60	"	7/2.9	6	16,448	289	220	2.3	15	Hat	-	-	-
"	"	No. 2 Nampho Sub.	1	66	60	"	7/2.9	3	12,057	210	100	-	-	-	30	Teeding	7
"	"	No. 1 Nampho Sub.	2	66	60	"	7/2.9	6	28,96	218	200	23	26	Hat	-	-	-
"	"	Light Metal	1	66	60	"	7/2.9	3	3,255	100	100	-	-	-	-	-	11
"	"	Refinery	2	66	60	"	7/2.6	6	27,448	289	220	2.9	25	Xo	-	-	-
"	"	No. 2 Sub.	1	66	60	"	7/2.6	3	6,327	120	100	-	-	-	4	Teeding	19
"	"	Chemical	1	66	60	"	7/2.6	3	3,51	110	100	-	-	-	2	"	10
"	"	Zinc	1	66	60	"	7/2.6	3	1,549	110	100	-	-	-	-	-	5
"	"	Turbo	1	66	60	"	7/2.6	3	14,1	210	100	-	-	-	-	-	41
"	"	Kungso	1	66	60	"	5	3	16,641	135	100	-	-	-	-	-	58
"	"	Chemical	2	66	60	"	7/2.6	6	15,636	140	100	-	-	-	-	-	26
"	"	Sengam	1	66	60	"	7/2.6	3	23,139	360	225	1.2	21	Hat	-	-	11
"	"	Sengam	2	66	60	"	7/2.9	6	12,004	1105	220	1.6	80	"	-	-	-
"	"	Chetok	1	66	60	"	7/2.6	3	2,628	200	100	-	-	-	-	-	32
"	"	Sengam	1	66	60	"	7/2.9	3	57,79	301	100	1.5	4	-	-	-	544
"	"	South	2	66	60	"	7/2.6	3	46,832	350	220	1.6	350	Hat	-	-	-

Sheet 126 215
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Suspension Insulator		Elevated & Ground Lines		Safety Transmission Facilities		No. of Cords & Strands		Neutral Contact Point		Date of Construction		Remarks	
Serial Number	Approximate Total Number in Suspension	Kind	Thickness in in.	No. of Cords	No. of Lines	Length (ft.)	Kind	Kind	Ohm to KVA	Year	Month		
9 4 5	7202	ST	7/26	1	1	52.692	AL 19.2	-	-	1933	12	2.1	
4 5	385	ST	7/26	1	1	2.3	AL 7.2	-	-	1941		2.2	
4 5	582	ST	-	-	-	-	-	-	-	1942	9	2.6	
4 5	1596	ST	7/26	1	1	42.02	300 4	-	-	1943	1	2.2	
4 5	162	"	-	-	-	-	-	-	-	1942	7	2.7	
4 5	264	ST	7/26	1	1	42.02	300 4	-	-	1942	12	2.3	
4 5	630	"	-	-	1	3.1	AL 3.2	-	-	1935	4	2	
4 2	546	"	-	-	-	-	-	-	-	1942	5	2	
4 5	125	"	-	-	-	-	-	-	-	1940	5	2.2	
4 5	649	"	-	-	1	48.60	300 4	-	-	1928	10	2	
4 5	1136	"	-	-	5	82.00	300 4	-	-	1937	5	2	
4 5	1528	"	-	-	1	30.96	-	-	-	1944	12	2	
4 5	2085	ST	7/26	1	1	2.33	" 4	-	-	1843	6	2.4	
4 5	2080	ST	7/26	1	1	20.399	" 4	-	-	1941	6	2.4	
4 5	348	ST	-	-	1	26.87	" 4	-	-	1943	10	2	
4 5	348	ST	-	-	2	37.6	" 4	-	-	1843	10	2.5	
4 5	1058	ST	7/26	1	1	28	" 4	-	-	1845	7	2.7	

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Suspension Insulator Serial Number	Make	Elevated and Ground wires (H. in.)	Wires (inches)	Safety No. of lines	Transmission facilities Kind and Section Capacity Feeder lines	Kind (inches)	Neutral Location	Kind KVA	Chart of the road average amount of electric power generated here	Remarks
4 5 2100	Japan Insulator	ST 226	1	1	-	-	-	-	1935 2.5	
" 5 1850	"	ST 226	1	1	44	4	-	-	1935 2.5	
" 5 180	"	ST 226	1	1	44	4	-	-	1935 2.2	
4 5 1400	"		1	1	4	-	-	-	1935 2.2	
4 5 2550	"		1	1986	4	-	-	-	1943 2.6	
				203.7						Equipped in 1948
4 5 4800	Japan Insulator	-	-	2	705	4	-	3	1940 2.6	
4 5 5550	"	-	-	2	55.75	4	-	2	1940.3 2.2	
4 5 30	"	-	-	-	-	4	-	-	1940 2.2	
4 5 3090	ST 226	1	1	37.6	4	-	-	-	1937 2.7	
4 5 6500	"	-	-	2	692	4	-	Unson Sub.	1940 2.2	
4 5 26039	"	-	-	2	12744	4	-	Unson Sub.	1939 2.2	
4 5 6349	Antsu Kage	-	-	2	38902	4	-	4	1939 2.6	
4 5 6132	"	-	-	2	41955	4	-	3	1940 2.6	
4 5 60934	Insulator	-	-	1	2	4	-	1	1941 2.6	

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No. of Poles	Name of Line	Section	No. of Poles	Kind	Electric Wire (mm ²)	No. of Cables	Distance between poles (m)	Supporting Poles				Total			
								Shell	Tower	Iron	Wood				
1	North Tong	Tacari	45.8	1	66	60	"	7.26	3	137.29	0.28	100	2	2	139
2	North Tong	Tacari	24.3	2	66	60	"	7.26	3	137.29	0.28	200	1.6	1.42	"
3	North Tong	Tacari	24.3	3	66	60	"	7.26	3	137.29	0.28	300	1.6	2.3	506
4	North Tong	Tacari	24.3	4	66	60	"	7.26	3	137.29	0.28	400	1.6	3.2	"
5	North Tong	Tacari	24.3	5	66	60	"	7.26	3	137.29	0.28	500	1.6	4.1	"
6	North Tong	Tacari	24.3	6	66	60	"	7.26	3	137.29	0.28	600	1.6	5.0	"
7	North Tong	Tacari	24.3	7	66	60	"	7.26	3	137.29	0.28	700	1.6	5.9	"
8	North Tong	Tacari	24.3	8	66	60	"	7.26	3	137.29	0.28	800	1.6	6.8	"
9	North Tong	Tacari	24.3	9	66	60	"	7.26	3	137.29	0.28	900	1.6	7.7	"
10	North Tong	Tacari	24.3	10	66	60	"	7.26	3	137.29	0.28	1000	1.6	8.6	"
11	North Tong	Tacari	24.3	11	66	60	"	7.26	3	137.29	0.28	1100	1.6	9.5	"
12	North Tong	Tacari	24.3	12	66	60	"	7.26	3	137.29	0.28	1200	1.6	10.4	"
13	North Tong	Tacari	24.3	13	66	60	"	7.26	3	137.29	0.28	1300	1.6	11.3	"
14	North Tong	Tacari	24.3	14	66	60	"	7.26	3	137.29	0.28	1400	1.6	12.2	"
15	North Tong	Tacari	24.3	15	66	60	"	7.26	3	137.29	0.28	1500	1.6	13.1	"
16	North Tong	Tacari	24.3	16	66	60	"	7.26	3	137.29	0.28	1600	1.6	14.0	"
17	North Tong	Tacari	24.3	17	66	60	"	7.26	3	137.29	0.28	1700	1.6	14.9	"
18	North Tong	Tacari	24.3	18	66	60	"	7.26	3	137.29	0.28	1800	1.6	15.8	"
19	North Tong	Tacari	24.3	19	66	60	"	7.26	3	137.29	0.28	1900	1.6	16.7	"
20	North Tong	Tacari	24.3	20	66	60	"	7.26	3	137.29	0.28	2000	1.6	17.6	"
21	North Tong	Tacari	24.3	21	66	60	"	7.26	3	137.29	0.28	2100	1.6	18.5	"
22	North Tong	Tacari	24.3	22	66	60	"	7.26	3	137.29	0.28	2200	1.6	19.4	"
23	North Tong	Tacari	24.3	23	66	60	"	7.26	3	137.29	0.28	2300	1.6	20.3	"
24	North Tong	Tacari	24.3	24	66	60	"	7.26	3	137.29	0.28	2400	1.6	21.2	"
25	North Tong	Tacari	24.3	25	66	60	"	7.26	3	137.29	0.28	2500	1.6	22.1	"
26	North Tong	Tacari	24.3	26	66	60	"	7.26	3	137.29	0.28	2600	1.6	23.0	"
27	North Tong	Tacari	24.3	27	66	60	"	7.26	3	137.29	0.28	2700	1.6	23.9	"
28	North Tong	Tacari	24.3	28	66	60	"	7.26	3	137.29	0.28	2800	1.6	24.8	"
29	North Tong	Tacari	24.3	29	66	60	"	7.26	3	137.29	0.28	2900	1.6	25.7	"
30	North Tong	Tacari	24.3	30	66	60	"	7.26	3	137.29	0.28	3000	1.6	26.6	"
31	North Tong	Tacari	24.3	31	66	60	"	7.26	3	137.29	0.28	3100	1.6	27.5	"
32	North Tong	Tacari	24.3	32	66	60	"	7.26	3	137.29	0.28	3200	1.6	28.4	"
33	North Tong	Tacari	24.3	33	66	60	"	7.26	3	137.29	0.28	3300	1.6	29.3	"
34	North Tong	Tacari	24.3	34	66	60	"	7.26	3	137.29	0.28	3400	1.6	30.2	"
35	North Tong	Tacari	24.3	35	66	60	"	7.26	3	137.29	0.28	3500	1.6	31.1	"
36	North Tong	Tacari	24.3	36	66	60	"	7.26	3	137.29	0.28	3600	1.6	32.0	"
37	North Tong	Tacari	24.3	37	66	60	"	7.26	3	137.29	0.28	3700	1.6	32.9	"
38	North Tong	Tacari	24.3	38	66	60	"	7.26	3	137.29	0.28	3800	1.6	33.8	"
39	North Tong	Tacari	24.3	39	66	60	"	7.26	3	137.29	0.28	3900	1.6	34.7	"
40	North Tong	Tacari	24.3	40	66	60	"	7.26	3	137.29	0.28	4000	1.6	35.6	"
41	North Tong	Tacari	24.3	41	66	60	"	7.26	3	137.29	0.28	4100	1.6	36.5	"
42	North Tong	Tacari	24.3	42	66	60	"	7.26	3	137.29	0.28	4200	1.6	37.4	"
43	North Tong	Tacari	24.3	43	66	60	"	7.26	3	137.29	0.28	4300	1.6	38.3	"
44	North Tong	Tacari	24.3	44	66	60	"	7.26	3	137.29	0.28	4400	1.6	39.2	"
45	North Tong	Tacari	24.3	45	66	60	"	7.26	3	137.29	0.28	4500	1.6	40.1	"
46	North Tong	Tacari	24.3	46	66	60	"	7.26	3	137.29	0.28	4600	1.6	41.0	"
47	North Tong	Tacari	24.3	47	66	60	"	7.26	3	137.29	0.28	4700	1.6	41.9	"
48	North Tong	Tacari	24.3	48	66	60	"	7.26	3	137.29	0.28	4800	1.6	42.8	"
49	North Tong	Tacari	24.3	49	66	60	"	7.26	3	137.29	0.28	4900	1.6	43.7	"
50	North Tong	Tacari	24.3	50	66	60	"	7.26	3	137.29	0.28	5000	1.6	44.6	"
51	North Tong	Tacari	24.3	51	66	60	"	7.26	3	137.29	0.28	5100	1.6	45.5	"
52	North Tong	Tacari	24.3	52	66	60	"	7.26	3	137.29	0.28	5200	1.6	46.4	"
53	North Tong	Tacari	24.3	53	66	60	"	7.26	3	137.29	0.28	5300	1.6	47.3	"
54	North Tong	Tacari	24.3	54	66	60	"	7.26	3	137.29	0.28	5400	1.6	48.2	"
55	North Tong	Tacari	24.3	55	66	60	"	7.26	3	137.29	0.28	5500	1.6	49.1	"
56	North Tong	Tacari	24.3	56	66	60	"	7.26	3	137.29	0.28	5600	1.6	50.0	"
57	North Tong	Tacari	24.3	57	66	60	"	7.26	3	137.29	0.28	5700	1.6	50.9	"
58	North Tong	Tacari	24.3	58	66	60	"	7.26	3	137.29	0.28	5800	1.6	51.8	"
59	North Tong	Tacari	24.3	59	66	60	"	7.26	3	137.29	0.28	5900	1.6	52.7	"
60	North Tong	Tacari	24.3	60	66	60	"	7.26	3	137.29	0.28	6000	1.6	53.6	"
61	North Tong	Tacari	24.3	61	66	60	"	7.26	3	137.29	0.28	6100	1.6	54.5	"
62	North Tong	Tacari	24.3	62	66	60	"	7.26	3	137.29	0.28	6200	1.6	55.4	"
63	North Tong	Tacari	24.3	63	66	60	"	7.26	3	137.29	0.28	6300	1.6	56.3	"
64	North Tong	Tacari	24.3	64	66	60	"	7.26	3	137.29	0.28	6400	1.6	57.2	"
65	North Tong	Tacari	24.3	65	66	60	"	7.26	3	137.29	0.28	6500	1.6	58.1	"
66	North Tong	Tacari	24.3	66	66	60	"	7.26	3	137.29	0.28	6600	1.6	59.0	"
67	North Tong	Tacari	24.3	67	66	60	"	7.26	3	137.29	0.28	6700	1.6	59.9	"
68	North Tong	Tacari	24.3	68	66	60	"	7.26	3	137.29	0.28	6800	1.6	60.8	"
69	North Tong	Tacari	24.3	69	66	60	"	7.26	3	137.29	0.28	6900	1.6	61.7	"
70	North Tong	Tacari	24.3	70	66	60	"	7.26	3	137.29	0.28	7000	1.6	62.6	"
71	North Tong	Tacari	24.3	71	66	60	"	7.26	3	137.29	0.28	7100	1.6	63.5	"
72	North Tong	Tacari	24.3	72	66	60	"	7.26	3	137.29	0.28	7200	1.6	64.4	"
73	North Tong	Tacari	24.3	73	66	60	"	7.26	3	137.29	0.28	7300	1.6	65.3	"
74	North Tong	Tacari	24.3	74	66	60	"	7.26	3	137.29	0.28	7400	1.6	66.2	"
75	North Tong	Tacari	24.3	75	66	60	"	7.26	3	137.29	0.28	7500	1.6	67.1	"
76	North Tong	Tacari	24.3	76	66	60	"	7.26	3	137.29	0.28	7600	1.6	68.0	"
77	North Tong	Tacari	24.3	77	66	60	"	7.26	3	137.29	0.28	7700	1.6	68.9	"
78	North Tong	Tacari	24.3	78	66	60	"	7.26	3	137.29	0.28	7800	1.6	69.8	"
79	North Tong	Tacari	24.3	79	66	60	"	7.26	3	137.29	0.28	7900	1.6	70.7	"
80	North Tong	Tacari	24.3	80	66	60	"	7.26	3	137.29	0.28	8000	1.6	71.6	"
81	North Tong	Tacari	24.3	81	66	60	"	7.26	3	137.29	0.28	8100	1.6	72.5	"
82	North Tong	Tacari	24.3	82	66	60	"	7.26	3	137.29	0.28	8200	1.6	73.4	"
83	North Tong	Tacari	24.3	83	66	60	"	7.26	3	137.29	0.28	8300	1.6	74.3	"
84	North Tong	Tacari	24.3	84	66	60</									

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Suspension Insulator		Elevated and ground wires		Safety transmission facilities		Mutual Contact Point		Chart of Standard Assignment of Electric mile ground wire		Remarks		
Serial number	Kind	Kind	Kind	Kind	Kind	Kind	Kind	Kind	Kind	Kind	Kind	
4	5	12	-	-	2	1937	4	-	5	-	1939 5	2.6
11	4	5	578	1/26	1	29.2	4	-	-	-	1737	2.2
4	5	1158	-	-	2	63.7	4	-	-	-	1937 3	2.6
4	5	30	-	-	2	6.6	4	-	-	-	"	2.6
4	5	2056	-	-	2	98.7	4	-	5	-	1941 1	2.6
4	5	3035	-	-	1	12.5	4	-	3	-	1941 4	2.6
4	5	1941	1ST	1/26	1	19.8	4	-	-	-	1941 1	2.6
		10281				100.54						
4	5	2900	ST	1/23	1	23.9	4	-	3	-	1933 10	2.1
4	5	1547	1ST	1/23	1	14.4	4	-	2	-	1933 5	2.1
4	5	4010	-	-	1	21.6	4	-	3	-	1935 1	2.6
4	5	2554	1ST	7/23	1	45.8	4	-	4	-	1939 9	2.6
4	5	510	-	-	1	4	4	-	-	-	1947 11	2.6
		1661				112						
4	5	1604	ST	7/26	1	67.7	4	-	3	-	1938 9	2.6

66 KV (Kirch System)

North East Hick gang	Yonggan Yonggan Factory	Kitchin Sub. 466	1 66 60	Offen	32.3	3	527	290	5	-	-	440
"	Sungjin Sungjin Sub	Kitchin Sub. 208	1 66 60	"	1/26	3	624	250	100	1.4	4	182

Suspension Indicator	Serial Number	Approximate Date Installed	Elevated and Ground Wires (in in)	Safety Ground No. of Lines	Transmission Length (km)	Telephone Lines (in in)	Kind and Section of Cable	No. of Stations	Neutral Contact Location	Kind OH or KVA	Chart of Location of Electric Power System	Remarks
	5	4200		1	30.1	20.0	2	1			1934	2.5
	5	150		1	0.7			1			1941	2.5
	5	191		1	0.5		4	1			1943	2.5
	5	2125		1	2.2		4	1			1945	2.6
	5	1499		1	1.8		4	1			1941	2.6
	5	3750	ST 1/2.3	1	2.8		4	3			1940	2.5
	5	3200	ST 1/2.9	1	1.0		4				1939	2.3
	5	2400	ST 1/2.3	1	6.8		4				1940	2.3
	5	4000		2	4.5		4					2.6
	5	4500		1	4	0.5	4	2				33KV being used.
	5	1000	ST 1/2.9	1	2	7.5	4	4				
	5	9500	ST 1/2.9	1	2	38.2	4	4			1939	2.3
	5	2500										

46cm

308.3

4 5 5755

1 42.8

4

1938 2.6

4 5 4448

1 229

4

1937 2.3

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Suspension Insulator		Elevated and Ground wires		Safety Transmission Facilities		No. of Stations		Neutral Contact point		Cautions		Remarks
Serial Number	Approximate Total Number	Kind	Thickness (mm)	No. of Cables	No. of Tension (mm)	Telephone Lines	Kind of Cable	Location	Kind of Cable	OT	KVA	
4	5	9833			71.7							
4	5	2281	Osaka Prefecture	4	1443	High	4				1938	2.6
4	5	1450	Yamanashi Prefecture	4	36.12	"	4			2000	1939	2.6
4	5	1520	"	1	52.29	"	4	1	3		1939	2
4	5	1606	"	2	81.8	"	4	1			1939	2
4	5	2939	"	1	14.3	"	4				1939	2.6
4	5	1400	"	1	8.4	"	4				1943	2.6
4	5	2993	"	1	59.95	"	4	1			1939	2
4	5	"	"	"	"	4					1939	2
		3622			2953							
4	5	2154	Osaka ST	1	2	2.5	4				1939	2.6
4	5	6274	Osaka Insulated	2	392	"	4				1941	2.6
4	5	16644	4 ST	1	2	90.9	"	4	1	6	1930	3.8
4	5	2100	"	1	10	"	4				1936	2.6
4	5	2220	"		4.0	"	4				1946	2.6

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Suspension Insulator Serial Number	Type of Insulator	Maker	Elevated and ground wire	Safety Transmission Facilities	Telephone lines	Kind of station	Neutral Contact Point	Kind Ohm or KVA	Date of construction	Remarks
4	5	5351	Insulator	2	34	000	4		1939 1	2.6
"	5	4336	Matsu page	2	23	"	1/2		1939 11	2.6
"	5	6521	Insulator	2	31/35	"	4		1940 11	2.6
"	5	25.2	"	2	36	"	4		1940 11	2.6
"	5	1999	"	2	72	"	4		1940 11	2.6
"	5	145	"						1946 12	2.6
		53406								
4	5	6125	-	2	33759	Ins	-	4	1933 12	2.6
"	5	1742	-	1	7.8	"	-	-	1941 1	2.6
"	5	7981	-	2	4058	"	-	4	1939 11	2.6
"	5	3152	-	1	19	"	-	-	1940 12	2.6
"	5	2774	-	-	-	-	-	-	1941 6	2.6
"	5	18029	-	2	17398	Ins	4.0	-	1939 7	2.6
4	5	1290	-	1	4746	Ins	4.0	-	1939 7	2.6
		62912		204569						

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Suspension and Location		Potential Insulation	Ground Wire	Security	Communication	Equipment	Number of Sockets	Number of Cord Stations	Neutral Contact Point	Remarks
Serial Number	Insulation	Kind	Kind	Kind	Kind	Kind	Kind	Kind	Kind	Kind
306	1998	1	4.00	1	4.00	1	4.00	1	1936	1.9
234	1998	1	5.14	1	5.14	1	5.14	1	1936	1.9
209	1998	1	3.72	1	3.72	1	3.72	1	1936	1.9
2 3 301	1998	1	11.30	1	11.30	1	11.30	1	1936	1.9
2 3 251	1998	1	12.35	1	12.35	1	12.35	1	1936	1.9
2 3 244	1998	1	3.88	1	3.88	1	3.88	1	1936	1.9
162	1998	1	10.93	1	10.93	1	10.93	1	1936	1.9
96	1998	1	10.10	1	10.10	1	10.10	1	1936	1.9
93	1998	1	10.10	1	10.10	1	10.10	1	1936	1.9
74	1998	1	29.90	1	29.90	1	29.90	1	1936	1.9
360	1998	1	2.12	1	2.12	1	2.12	1	1936	1.9
2 3 155	1998	1	12.04	1	12.04	1	12.04	1	1936	1.9
2 3 124	1998	1	2.25	1	2.25	1	2.25	1	1936	1.9
2 3 180	1998	1	13.10	1	13.10	1	13.10	1	1936	1.9
2 3 605	1998	1	6.31	1	6.31	1	6.31	1	1936	1.9

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Place of Installation	Location	No. of Circuit Lines Length (Kilom.)	No. of Transformers max. Voltage KV	Electric wire		Distance between poles		Supporting Poles			Wooden Spaced-concrete
				Kind	Material	Material	Material	Iron tower Standard height (ft)	Iron pole Basic height (ft)	Wooden pole Basic height (ft)	
Kanggye Branch	Botalmas	120.177									540
Pyongyang West	Yongmu Sub.	7199	1	22 60	6/10	3	21,597	350	4	4 Nishon bashi	125
"	Taishan Sub.	2100	1	22 60	"	3					
"	Takson Sub.	1007	1	22 60	"	3					
"	Naik Sub.	1159	1	22 60	"	3	24,541	100	70		69
"	Myohyang Sub.	11,877	1	22 60	"	3	34,431	150	50		132
"	Sungui Sub.	11,031	1	22 60	"	3	35,190	200	50		145
Pyongyang West Branch	Pyongyang Sub.	52,335	22				15,7015		4	69	525
Pyongyang West Branch	Taishan Sub.	4,208					12,64071		28	69	605 215
Pyongyang West Branch	Naik Sub.	2,295	1	22 60	6/10	3	21,100	100	50		560
"	Pongsang Sub.	6,024	1	22 60	"	3	21,597	29	29		1
"	Yongmu Sub.	331	1	22 60	"	3	21,100	50	50		32
"	Yongmu Sub.	1,204	1	22 60	"	3	24,792	100	50		100
"	Unhung Sub.	7,116	1	22 60	"	3	22,340	100	50		147
"	Chongju Sub.	10,314	1	22 60	"	3	30,942	100	50		170
"	Chongju Sub.	5,568	1	22 60	"	3	15,600	100	50		117
"	Chongju Sub.	8,428	1	22 60	"	3	21,597	100	50		165
"	Sinuiju Sub.	35,624	1	22 60	"	3	16,015	570	50	17 3 Ugi Jewa	681

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Suspension Insulator Serial Number	Insulator Material	Ground Wire	Security Communication Equipment	Telephone Lines	Neutral Contact Point	Kind	Remarks
2 3	56 Japan 300 insulator material		1 9199	40	add.		1.2
	18 Japan 210 insulator material		1 8129	40	add.		1.2
2 3	23 714		1 11017	40			1.2
2 3	22 7935		1 11031	40			1.2
2 3	156 Japan 190 insulator material		1 12015	40	add.		1.2
2 3	9 Japan 3 insulator material		1 1204	40			1.2
2 3	27 1270		1 1215	40			1.2
2 3	32 1270		1 1264	40			1.2
2 3	40 1270		1 1276	40			1.2
2 3	45 1270		1 1280	40			1.2
2 3	130 1270		1 1288	40			1.2
2 3	180 1270		1 1288	40			1.2
2 3	188 1270		1 1284	40			1.2

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Suspension Insulator		Rating	Ground Wire	Security	Communication	Equipment	Location	Neutral Contact Point	Notes	Remarks
Serial Number	Insulator Type	Rating	Ground Wire	Security	Communication	Equipment	Location	Neutral Contact Point	Notes	Remarks
2	3	126 1/2" 1152	1152	1	8507	1152	4.0	1152	1152	1.2
2	3	30 " 280 1/2"	280 1/2"	1	2850	"	4.0	"	"	1.1
2	3	295 " 295 1/2"	295 1/2"	1	15021	"	4.0	"	"	1
2	3	59 " 110 "	110 "	1	1740	"	4.0	"	"	1
2	3	90 1/2" 122 1/2"	122 1/2"	1	15500	"	4.0	1152	1152	1.1
2	3	156 " 1600 "	1600 "	1	15500	"	4.0	"	"	1.2
2	3	30 " 120 "	120 "	1	15500	"	4.0	"	"	1.2
2	3	147 " 455 "	455 "	1	15500	"	4.0	"	"	1.2
2	3	6 " 28 "	28 "	1	15500	"	4.0	"	"	1.2
2	3	28 " 293 "	293 "	1	15500	"	4.0	"	"	1.2
2	3	32 " 300 "	300 "	1	15500	"	4.0	"	"	1.2
2	3	116 " 116 "	116 "	1	2480	116 "	4.0	"	"	1.2
3	260 "	197 "	197 "	1	3500	197 "	4.0	"	"	1.2
3	96 "	345 "	345 "	1	9500	"	4.0	"	"	1.2

236526

District	Section	Name of line	Length (KM)	No. of circuits	Frequency Kc	Electric wire Kind	Distance poles (m)	Supporting Poles				Total
								Standard (C.T.)	Iron tower	Hand pole	Other	
Pyongyang	North	Total	2120				400		2	76		221
		Chuchon	569	1	22	60	1703	1047	50			106
		Kimchon	1047	1	22	60	3015	142	50			137
		Pyongyang	2057	1	22	60	1652	73	50			341
		Kwangju	2097	1	22	60	1611	140	50			505
		Pyongyang					245436					1206
Pyongyang Total							1053788	7	76		5940	
Hwang North	Sung	Chuchon	449	1	22	60	1332	13	50			576
		Chuchon	169	1	22	60	150	117	50	15	100	314
		Matari	117	1	22	60	153	150	50			54
		Pyongyang	2106	1	22	60	162	110	60			324
		Pyongyang	345	1	22	60	1052	3	55			516
		Sinuiju	203	1	22	60	50	21	55			343
		Singye	726	1	22	60	50	26	50			370
		Sinhui	606	1	22	60	50	3	50			77
		Singye	378	1	22	60	50	3	55			635
		Tongkang	1095	1	22	60	3385	150	60			189
		Tongkang										
		Tongkang										
		Tongkang										

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Suspension Insulator	Wire Type	Security	Communication	Equipment	Number of Locations	Neutral Location	Kind to KVA	Date of Use	Standard arrangement to be used	Remarks
Serial Number	Wire Type	Wire Type	Wire Type	Wire Type	Wire Type	Wire Type	Wire Type	Wire Type	Wire Type	Wire Type
2	2	26	318	1	6587	AL	4.2	add port	Oct. 1982	1
2	2	84	420	1	6517	100	4.0	"	Aug. 1983	1
2	2	68	315	1	2059	"	4.0	add	Aug. 1981	1
2	2	50	1400	1	2281	"	4.0	"	Aug. 1985	1
2	3	3190	300	1	42.4	200	4.0	add	Aug. 1987	1
3	3	156	866	1	6.7	"	4.0	"	Aug. 1989	1.2
3	3	70	112	1	4.7	"	4.0	"	Aug. 1991	1
3	3	190	852	1	3.2	"	"	"	Aug. 1992	1
3	3	166	1135	1	34.5	"	4.0	"	Aug. 1993	1
3	3	320	218	1	20.3	"	4.0	"	Aug. 1994	1
2	3	442	1400	1	236	"	4.0	"	Nov. 1996	1
2	3	57	222	1	6.6	"	4.0	"	Aug. 1997	1
3	3	305	1500	1	32.8	"	4.0	"	Aug. 1998	1
2	3	156	129	1	1095	AL	4.0	"	Aug. 1996	1

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Location	Name of Mine	Type of Mine	Depth (m)	No. of Shafts	Electric Wire Kind	Distance between poles	Supporting Poles										Total
							Number	Material	Size	Weight	Length	Volume	Area	Perimeter	Height	Width	
Huong North	Huong	1	22	60	Copper 1/2.3	3	28.8	183	40	-	-	-	-	-	-	-	96
"	Jutong	1	22	60	" 1/2.3	3	109	10	-	-	-	-	-	-	-	-	94
"	Kyau	1	22	60	" 1/2.0	3	35	90	75	-	-	-	-	-	-	-	34
"	Tung	1	22	60	" 1/2.0	3	18.7	109	80	-	-	-	-	-	-	-	263
"	Nguyen	1	22	60	" 1/2.3	3	12.3	150	80	-	-	-	-	-	-	-	77
"	Kyau	1	22	60	" 1/2.0	3	74.6	90	80	-	-	-	-	-	-	-	124
Huong North Total							84.502										4305
North West Distributing							1065.899										15460
Grand Total																	
"	North West	1	22	60	Copper 1/2.5	3	8.803	130	60	-	-	-	-	-	-	-	25
Huong North Total							8.803										8330
Khang Central	Khang	1	22	60	Copper 1/2.4	3	10.41	100	65	-	-	-	-	-	-	-	121
"	Huong	1	22	60	" 1/2.3	3	5.85	120	50	-	-	-	-	-	-	-	354
"	Chang	1	22	60	" 1/2.6	3	9.6	155	65	-	-	-	-	-	-	-	66
"	Huong	1	22	60	" 1/2.6	3	9.9	100	50	-	-	-	-	-	-	-	66
"	Chang	1	22	60	" 1/2.0	3	57.	109	59	3	86	100	-	-	-	-	232
"	Huong	1	22	60	" 1/2.3	3	46.5	284	50	-	-	-	-	-	-	-	388
"	Huong	1	22	60	" 1/2.3	3	10.3	119	60	-	-	-	-	-	-	-	149

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Suspension	Bay	Attenuator	Ground	Security	Frequency	Equipment	Range	Power	Modulation	Antenna	Height	Location	Kind	Date	Remarks
Model	Number	Model	Model	Model	Model	Model	Model	Model	Model	Model	Model	Model	Model	Model	Model
2	3	444	-	-	1	9.6	Yuen	4.0	-	Add	-	-	-	Oct. 1933	1.2
2	3	822	-	-	1	2.4	"	4.0	-	"	-	-	-	Dec. 1938	1.2
2	3	144	-	-	1	2.5	"	4.0	-	"	-	-	-		1.2
2	3	936	609	-	1	21.9	"	4.0	-	"	-	-	-	April 1938	1.2
	3	51	180	-	1	4.1	"	4.0	-	"	-	-	-	Jan. 1941	1.2
2	3	150	313	-	1	8.2	"	4.0	-	"	-	-	-	Nov. 1934	1
2	3	83	-	-	1	16.11	"	4.0	-	"	-	-	-	June 1940	1
3	4	5003	Musa Musa	-	1	348	"	4.0	-	"	-	-	-	Dec. 1936	1
2	3	594	799	-	1	125	"	4.0	-	"	-	-	-	June 1943	1
2	3	617	Kym Kym	-	1	3.7	"	4.0	-	"	-	-	-	Jan. 1939	1
4	5	150	161	-	1	3.3	"	4.0	-	"	-	-	-	Jan. 1939	0.9
2	3	2050	Musa Musa	-	2	19.2	Yuen	4.3	-	Inde	1	-	-	June 1943	1
2	3	817	586	-	1	15.5	"	4.0	-	Add	1	-	-	Oct. 1941	1
4	8	1452	881	-	1	338	"	4.0	-	"	1	-	-	Feb. 1940	1
2	3	1306	230	-	1	105	"	4.0	-	"	-	-	-	Oct. 1941	1

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Name of Line	Section	Length (ft)	KV	Frequency KV	Electric Type	Distance between poles (ft)	Supporting Poles	Total Length (ft)
Kang Central Power	Kojo Kojo Sub.	136	22	60	Copper	1/2.2 3 428	200 58	213
"	Changjin Changjin Sub.	3802	22	60	"	1/2.6 3 105	197 100	396
"	Yangja Yangja Sub.	894	22	60	"	1/2.6 3 262	230 45	99
"	Chorwon Chorwon Sub.	135	22	60	"	1/2.3 3 564	140 30	34
"	Sanga Sanga Sub.	113	22	60	"	5.6 7/2.3 3 34	300 70	130
"	Sokcho Sokcho Sub.	140	22	60	"	7/2.6 3 420	197 70	208
Central Power Division Total							11,844	2816
Kang North do East	Kalma Kalma Sub.	130	22	60	"	1/2.6 3 420	5 55	3
"	Munhyang Munhyang Sub.	108	22	60	"	5.0 3 532	34 65	59
"	Munhyang Munhyang Sub.	1485	22	60	"	1/2.6 3 410	180 90	108
"	Muncheon Muncheon Sub.	1200	22	60	"	5.0 7/2.6 3 355	200 50	90
"	Sinlung Sinlung Sub.	5809	22	60	"	5.0 3 162	210 50	138
"	Pukson Pukson Sub.	7300	22	60	"	5.0 7/2.6 3 219	210 50	136
"	Sogok Sogok Sub.	5800	22	60	"	1/2.6 6 242	180 95	59
"	Kalma Kalma Sub.	2778	22	60	"	1/2.6 7 821	210 60	169
"	Sungdong Sungdong Sub.	3300	22	60	"	1/2.6 3 1132	270 50	60
"	Anbyon Anbyon Sub.	13600	22	60	"	7/2.6 3 4180	210 60	220

Suspension Insulator		Partial Insulator	Ground Wire	Security Communication Equipment		Telephone Lines		Number of		Neutral Contact Point		Remarks
Serial Number	Material	Kind	Thickness (mm)	No. of Circuit Lines	Height (m)	Kind	Telephone Lines	Number of	Kind	Location		
2 3 590	Aluminum	Aluminum	-	1	33.6	Steel	4.0	-	-	-	Feb 1943	1
3 4 3369	"	"	-	1	35.0	"	4.0	-	3	-	Dec 1940	1.1
2 3 1189	"	"	-	1	8.74	"	7.0	-	-	-	Dec 1941	1.1
2 3 167	Aluminum	Aluminum	-	1	1.82	"	2.2	-	-	-	Dec 1947	11
3 4 259	"	"	-	1	11.3	"	7.0	-	-	-	Feb 1941	1.5
2 3 418	"	"	-	1	13.77	"	4.0	-	-	-	April 1944	1
21252 4401					20 3.54							
2 3 18	"	"	-	1	4.10	Steel	4.0	-	-	-	May 1943	1
2 3 90	"	"	-	1	1.777	"	4.0	-	-	-	May 1939	1
3 4 2714	"	"	-	1	14.500	"	4.0	-	-	-	July 1939	2.6
2 3 226	"	"	-	1	11.200	"	4.0	-	-	-	Aug 1936	1
2 3 316	"	"	-	1	5.407	"	4.0	-	-	-	Aug 1942	1
2 3 168	"	"	-	1	7.300	"	4.0	-	-	-	Dec 1939	1
2 3 2867	"	"	-	1	5.945	"	4.0	-	-	-	Aug 1939	1
2 3 435	"	"	-	1	2.498	"	4.0	-	-	-	Feb 1936	1
2 2 174	"	"	-	1	38.40	"	4.0	-	-	-	Feb 1945	1
2 4 2146	"	"	-	1	13.600	"	4.0	-	-	-	Nov 1938	1

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Section	Name of High Voltage Line	Name of Circuit Breaker Protecting Line	Length (km)	No. of Insulators per Span	Electric Wire Kind	Distance between poles	Supporting Poles					Dead-end
							Standard	Basic	Basic	Basic	Basic	
Woman Branch (Kangwondo) Total						288.554						1164
Kangwondo Total						906.334						3780
North Ullin	Unhyang Sub	60400	1	22	60	Copper	7/2.6	3	1220	298	50	576
East Ullin	Unhyang Sub	11025	1	22	60	"	7/2.6	3	3920	115	50	220
"	Sunglung Ullin	84	1	22	60	"	7/2.6	3	6025	298	50	3
"	Kwong	626	1	22	60	"	7/2.6	3	2360	200	50	625
"	Kwong Ullin	9200	1	22	60	"	7/2.6	3	1100	245	50	151
"	Kwong Ullin	9400	1	22	60	"	7/2.6	3	2620	250	50	156
"	Chunglung	5600	1	22	60	"	7/2.6	3	1600	270	50	113
"	Unhyang Sub	1905	1	22	60	"	7/2.6	3	1515	225	50	200
"	Unhyang Sub	10800	1	22	60	"	7/2.6	3	3240	157	50	215
"	Pompo	50	1	22	60	"	7/2.6	3	1256	110	50	800
"	Unhyang Sub	7846	1	22	60	"	7/2.6	3	1100	140	55	159
"	Unhyang Sub	10847	1	22	60	"	7/2.6	3	3723	210	60	147
"	Unhyang Sub	819	1	22	60	"	7/2.6	3	2610	288	60	141
"	Unhyang Sub	10117	1	22	60	"	7/2.6	3	3024	86	60	161
Woman Branch (Hwangjin-gwondo) Total						515.323						2964
Woman Branch Total						958.877						9128

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Suspension Insulator		Petroleum Insulator	Ground Wire	Security Communication Equipment				Neutral Contact Point	Date of Use	Remarks	
Serial Number	Kind	Kind	Kind	No. of Circuits	Line Kind	Line Kind	Line Kind	Location	Kind		
2 3 276	Osaka	Osaka	-	1	40400	Iron	4.0	-	add.	Nov. 1939	1
2 3 276	Osaka	Osaka	-	1	11425	"	4.0	-	"	Nov. 1939	1
2 3 9	Osaka	Osaka	-	1	4145	"	4.0	-	"	July 1944	1
2 3 960	Osaka	Osaka	-	1	44260	"	4.0	-	"	May 1930	1
2 3 574	Osaka	Osaka	-	1	9200	"	4.0	-	"	Nov. 1939	1
2 3 1260	Osaka	Osaka	-	1	9400	"	4.0	-	"	Nov. 1939	1
2 3 135	Osaka	Osaka	-	1	5600	"	4.0	-	"	Sept. 1939	1
2 3 210	Osaka	Osaka	-	1	11905	"	4.0	-	"	May 1930	1
2 3 188	Osaka	Osaka	-	1	10800	"	4.0	-	"	Nov. 1932	1
3 4 924	Osaka	Osaka	-	1	5082	"	4.0	-	"	Sept. 1940	1
2 3 1269	Osaka	Osaka	-	1	9846	"	4.0	-	"	Dec. 1935	1
3 3 1317	Osaka	Osaka	-	1	12841	"	4.0	-	"	May 1935	1
3 4 2001	Osaka	Osaka	-	1	8900	"	4.0	-	"	Nov. 1939	1
3 4 692	Osaka	Osaka	-	1	10107	"	4.0	-	"	Dec. 1941	1

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Name of particular	Name of line	Name of line	Section	Number of conductors (line)	KV	Tension wires	Kind	Electric Wire	Distance between poles	Supporting Poles					Meters
										Non Tower	Hand	Wire	Wire	Wire	
										Standard	Standard	Standard	Standard	Standard	
Hamgyong Nampo	North East	Chonghyon Sub	167	1	22	60	Copper	6.5	3	50.1	71	50	-	-	701
"	"	Chonghyon Sub	151	1	22	60	"	6.5	3	53.4	20	50	-	-	29
"	"	Chonghyon Sub	132	1	22	60	"	7/2.3	3	128	59	50	-	-	81
"	"	Chonghyon Sub	132	1	22	60	"	7/2.3	3	120	52	50	-	-	117
"	"	Sondok Sub	6.0	1	22	60	"	7/2.0	3	120	52	50	-	-	154
"	"	Chonghyon Sub	132	1	22	60	"	7/2.0	3	41.4	302	45	-	-	102
"	"	Chonghyon Sub	132	1	22	60	"	7/2.0	3	21.6	337	45	-	-	11
"	"	Chonghyon Sub	132	1	22	60	"	7/2.0	3	15	52	50	-	-	195
"	"	Chonghyon Sub	132	1	22	60	"	7/2.6	3	6.03	65	50	-	-	126
"	"	Chonghyon Sub	132	1	22	60	"	7/2.6	3	28.2	242	50	-	-	509
"	"	Chonghyon Sub	297	1	22	60	"	7/2.6	3	89.1	199	50	-	-	1928
Hamhung Branch Total 1254															
Hamgyong Nampo	North East	Tokto Sub	18732	1	22	60	"	7/2.3	3	36.16	300	50	-	-	283
"	"	Tokto Sub	18732	1	22	60	"	7/2.3	3	24.20	240	50	-	-	144
"	"	Tokto Sub	18732	1	22	60	"	7/2.3	3	11.73	116	50	-	-	5
"	"	Tokto Sub	18732	1	22	60	"	7/2.3	3	89.43	237	50	-	-	316
"	"	Tokto Sub	18732	1	22	60	"	7/2.3	3	98.73	238	50	-	-	57
"	"	Tokto Sub	18732	1	22	60	"	7/2.3	3	29.50	80	50	-	-	40

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Suspension Insulator	Wire	Security	Communication	Equipment	Neutral Contact Point	Date of use	Remarks
Serial Number	Kind	No. of Cords	Length (ft.)	Telephone Lines (Pairs)	Kind	Ohm KLA	
3 186	Osaka Osaka	-	-	1	100H	0.5	Nov. 1935 0.9
3 300	119 "	-	-	1	"	35	Nov. 1935 1
2 3 36	Nikon Nikon basu basu	-	-	1	4.2	"	May 1939 1
2 3 36	" 305 "	-	-	1	6.0	"	Dec. 1944 1
2 3 9	" 42 "	-	-	1	13.8	"	Dec. 1931 0.85
2 3 3 1/2	" 381 "	-	-	1	7.2	"	May 1939 0.85
2 18	" 45 "	-	-	1	0.5	"	Aug. 1941 1
2 3 1790	Nikon Nikon basu basu	-	-	1	40.1	"	Jan. 1941 1
2 3 693	Nikon Nikon basu basu	-	-	1	-	-	Nov. 1945 0.9
3 178	Osaka Osaka	-	-	1	287	7/50	1
4 5 1133	Hi. 642 Hi. dachi dachi	-	-	1	18.732	"	Dec. 1947 1.2
2 3 555	" 326 "	-	-	1	8.040	"	July 1939 1.2
3 155	" "	-	-	1	3900	"	July 1940 1
2 3 116	" "	-	-	1	3435	"	July 1942 1
3 3 132	" "	-	-	1	3358	"	Dec. 1937 1
3 90	" "	-	-	1	2650	"	Dec. 1937 1

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Suspension Insulator		Patent Insulator		Ground wire	Security Communication Equipment				Number of Station Standards	Neutral Contact Point	Kind	Chim or KVA	Site is use	Re marks
Serial Number	Material	Material	Material	Material	No. of Circuit Lines	Telephone Lines	Kind	Kind	Kind	Kind	Kind	Kind	Kind	Kind
2 3	100	Hi	Hi		1	16081	Iron	4.0	-	add			1937	1
3	12	"	"		1	1814	"	4.0	-	"			1942	1
2 3	12	"	"		1	1323	"	4.0	-	"			1937	1
2 3	12	"	"		1	2213	"	4.0	-	"			1942	1.2
3	108	"	"		1	2211	"	4.0	-	"			Dec. 1939	1.2
2 3	1250	"	"		1	23225	"	4.0	-	"			Dec. 1942	1.2
2 3	2110	"	"		1	2110	"	4.0	-	"			Sept 1937	1.2
3	4 663	"	"		1	1201	"	4.0	-	"			1937	1.2
3	186	"	Hi	Hi	1								July 1939	1.2
3	4 3420	"	47	"									Aug. 1939	1.2
3	3 465	"	"		1	222	Iron	4.0	-	add			Dec. 1939	1.2
2 3	734	"	Hi	Hi	1	222	"	4.0	-	"			May 1939	1.2
2 3	763	"	"		1	14603	Iron	4.0	-	"			Dec 1942	1.2
2 3	264	"	"		1	222	"	4.0	-	"			Dec. 1942	1.2
2 3	324	"	"		1	8456	"	4.0	-	"			Aug 1943	1.2
2 3	120	"	"		1	4058	"	4.0	-	"			July 1944	1.2

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Province	Circuit Name	Location	Length (km)	Circuit No.	Voltage (KV)	Type of Line	Electric Wire		Distance between poles	Supporting Poles		Total
							Kind	Material		Material	Number	
Hamgyong Bukto	North Kang	Kilohu Sub.	29.3	1	22	60	App	7/3	3	88.29	50	447
"	"	Korhan Sub.	18.3	1	22	60	"	5.0	3	55.59	450	292
"	"	Pakson Kilohu Sub.	19.6	1	22	60	"	5.0	3	57.98	450	18
"	"	Kilohu Sub.	9.32	1	22	60	"	7/3	3	29.86	150	150
"	"	Sajong Sub.	6.208	1	22	60	"	7/3	3	18.21	250	103
Tanchon Branch (Hamhung)										303.419		2123
Total 10/08/1										194.86	4	4508
Tanchon Branch Total 28/699												6
Hamgyong Bukto	North Pugo	Kwanhu Sub.	0.310	1	22	60	App	5.0	3	6.30	50	402
"	"	Kwanhu Sub.	50.60	1	22	60	"	7/3	3	152.40	298	169
"	"	Tonaktong Sub.	9.1	1	22	60	Steel core cable	7/3	3	35.0	120	20
"	"	Imjin Sub.	2.3	2	22	60	Steel core cable	7/3	6	14.7	200	85
"	"	Pansu Sub.	4.9	2	22	60	App	7/3	6	27.0	169	69
"	"	Yangju Sub.	4.1	1	22	60	"	7/3	3	12.8	150	156
"	"	Chunnam Sub.	19.7	1	22	60	"	7/3	3	44.2	240	679
"	"	Odajin Sub.	42.4	1	22	60	"	7/3	3	128.3	335	353
"	"	Namhan Sub.	20.1	1	22	60	"	5.0	3	60.2	200	13.9
"	"	Tonghae Sub.	5.1	2	22	60	"	7/3	6	30.5	150	28
"	"	Chungdo Sub.	43.32	1	22	60	"	7/3	3	42.76	55	259

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Suspension Insulator	Attachment Insulator	Ground Wire	Security Circuit Lines	Communication Lines	Equipment Kind and acm	Neutral Contact Point	Remarks
Serial Number	Kind	Kind	No. of Cables	Length (km)	Telephone Lines	Kind Ohm or KVA	Standard arrangement electric wire insulation
2 3 1350	Hi. dachi	-	-	1 29373	Jun 4.0	-	Dec 1.2 1942
2 3 324	-	-	-	1 1883	" 4.0	-	Oct 1.2 1943
2 3 156	12 Hi. dachi	-	-	1 1926	" 4.0	-	June 1.2 1943
2 3 156	22 Hi. dachi	-	-	1 1926	" 4.0	-	June 1.2 1943
2 3 156	218 "	-	-	1 6208	" 4.0	-	March 1.2 1942
2 2 10	Osaka Porcelain	-	-	1 0310	" 4.0	-	Sept 0.93 1943
4 5 1574	"	-	-	1 53585	" 4.0	-	Jan 2.6 1936
2 200	Osaka Insulator	-	-	1 9.1	" 4.0	-	1.5
3 20	120 "	-	-	1 3.3	4.0	-	1.5
	760 "	-	-	1 5.0	" 4.0	-	1.5
	270 "	-	-	1 4.3	" 4.0	-	1.5
2 3 882	328 "	-	-	1 14.7	" 4.0	-	1.5
2 3 350	2650	-	-	1 345	" 4.0	- 3	2.3
2 3 50	1300	-	-	1 18.3	" 4.0	-	2.3
2 3 780	Osaka Porcelain	-	-	1 4.0	" 4.0	-	2.3
2 3 1680	Insulator	-	-	1 14332	" 4.0	-	Aug 1 1949

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250

Section	Name of Transmission Line	Number of Circuit Lines	Length (km)	Kind	No. of Cables	Thickness (mm)	Distance between poles	Supporting Poles		Wooden Poles
								Non Tower	Tower Pole	
								Standard (m)	Maximum (m)	
Hanggang North Hoe Buldo East	Hanggang Sub. 1906	1	22.60	Copper	3	2418	243	50	-	52
"	" Tong-Cheng Sub. 1928	1	22.60	"	3	2077	210	50	-	134
"	" Seon Sub. 1949	1	22.60	"	3	1679	17	50	-	3
"	" Seon Sub. 1955	1	22.60	"	3	2445	175	50	-	193
"	" Chok-Bin Sub. 2000	1	22.60	"	3	600	120	50	-	333
Chongjin Branch Total						8049				249
Tonghae District Division Grand Total						26340			18	13465
Hanggang Buldo Total						95387			66	5024
Hanggang Hockan Nando gang	Hanggang Sub. 2400	1	22.60	Copper	3	30832		50		469
Hanggang Hockan Nando gang	Hanggang Sub. 1922	1	22.60	Copper	3	150208			6	2146
11 KV										
Pyeong North Nando West	Pyeong Sub. 197	1	11	60 Copper	3	51	100	50	2	4
35 KV										
Kang North Nando East	Kang Sub. 199	1	35	60 Copper	5	29686	110	45		215

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Suspension Insulator	Serial Number	Material	Ground Leads	Security Communication Circuit	Telephone Lines	Kind (in No.)	Neutral Contact	Kind	Date of Use	Remarks
	2 3	162 insulator	191	2	0006	32			Jan. 1934	1
	2 3	179 " 392					3		Jan. 1939	1
	2 3	6 9		1	0147	40			May 1943	1
	2 3	158 414		1	0225	40			March 1937	1
	2 2	570 Porcelain		1	2010	9.0			1947	1
	5	480 2582		2	2788	40			Dec. 1939	1
	2 2	72 Anchi								
	2	138 insulator	1650 insulator		9896	9			April 1938	0.85

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Supply of Electricity

20 November 1950

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor or Indoor	Cooling Method	Phase	Frequency	Number			Remarks
			1st	2nd	3rd						Common use	Spare	Maker	
Pukchung Machine	45300	22650	66	2.3		△-△	Outdoor	Self colling	3	60	2	1	Shibaura	Machine
"	48600	24300	"	"		"	"	"	3	"	2	1	"	"
"	10000	1000	"	3.3		"	"	"	3	"	1		Meiden	"
Chŏngsu	51000	28000	"	0.15		"	"	"	3	"	2		Fuji	Chemistry
"	10000	5000	"	3.3		"	"	"	1	"	2		Shibaura	"
"	1500	500	22	"		"	"	"	1	"	3		Hidachi	"
Sŭnghori	6000	2000	66	44	22	"	"	"	1	"	3	1	Fuji	
Sŭnghori	600	200	22	3.3		"	"	"	1	"	3		Shibaura	
"	300	100	22	3.3		"	"	"	1	"	3		Hidachi	
Kunjari	1050	350	66	3.3		"	"	"	1	"	3	1	"	
Sŏngchŏn	1050	350	"	22	3.3	"	"	"	1	"	3	1	"	
Inpyŏng	1500	500	"	"	"	Y-△	Q	"	1	"	3	1	Shibaura	
"	600	200	22	3.3		△-△	"	"	1	60	3		"	
Hŭngnyŏng	1500	500	66	3.3		"	"	"	1	"	3		Hidachi	
Sunan	1800	600	"	"		"	"	"	1	"	3	1	"	
Sinohŏn	600	200	22	"		"	"	"	1	"	3	1	Shibaura	
Sukohŏn	450	1500	66	22		"	"	"	1	"	3	1	Hidachi	
"	1270	700	"	3.3		V-V	"	"	1	"	2		Shibaura	
"	1200	200	22	3.3		△-△	"	"	1	"	6		"	
Sinanju	3000	1000	66	22		△-△	"	"	1	"	3	1	Nishijima	
"	2700	300	22	3.3		"	"	"	1	"	9	1	Shibaura	
Kaechŏn	6000	2000	66	22		"	"	"	1	"	3	1	"	
"	700	300	22	3.3		"	"	"	1	"	3	1	"	
"	700	50	"	"		"	"	"	1	"	3	1	"	
Sunchŏn	2250	750	66	22		"	"	"	1	"	3	1	"	
"	900	300	22	3.3		△-△	"	"	1	60	3		"	
"	450	150	"	"		"	"	"	1	60	3		Osaka	
"	860	500	66	22		"	"	"	1	"	2		Hidachi	
"	150	50	22	3.3		"	"	"	1	"	3		Shibaura	
Tŏkchŏn	450	150	66	3.3		"	"	"	1	"	3		Osaka	
Chunghwa	600	200	22	3.3		"	"	"	1	"	3		Hidachi	
Tonghwa	900	300	22	"		"	"	"	1	"	3		Osaka	

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor Indoor	Cooling Method	Phase	Frequency	Number		Maker	Remarks
			1st	2nd	3rd						Common	Spare		
Chongnyong	450	150	22	3.3		Δ-Δ	Outdoor	Self cooling	1	60	3	1	Osaka	
Mirim	300	100	22	3.3		"	"	"	1	"	3	1	Fuji	
Yongyu	1200	200	"	"		"	"	"	1	"	6	1	"	
Namyang	900	300	"	"		"	"	"	1	"	3	1	Nishijima	
"	300	100	"	"		"	"	"	1	"	3	1	Hidachi	
Chasong	2100	700	66	22	3.3	"	"	"	1	"	3	1	Shibaura	
Pongchön	450	150	22	3.3		"	"	"	1	"	3	1	Nishijima	
Yongdam	600	200	"	"		"	"	"	1	"	3	1	"	
Hallyong	450	150	"	"		"	"	"	1	"	3	1	Shibaura	
"	300	100	"	"		"	"	"	1	"	6	1	"	
Sinchang	1800	300	"	"		"	"	"	1	"	2	1	"	
Taepyong	866	500	66	22		V-V	"	"	1	"	3	1	"	
"		750	"	"		"	"	"	1	"	3	1	"	
"	150	50	22	3.3		Δ-Δ	"	"	1	60	3	1	"	
Pukchin	2250	750	66	22	3.3	"	"	"	1	"	3	1	"	
Samgö	1500	500	"	22		"	"	"	1	"	3	1	"	
"	600	200	22	3.3		"	"	"	1	"	6	1	"	
Pakchön	1200	200	22	"		"	"	"	1	"	3	1	Shibaura	
Yongdang	600	200	22	"		Δ-Δ	"	"	1	"	3	1	Hidachi	
Myohyangsan	300	100	"	"		"	"	"	1	"	3	1	Osaka	
"		60	"	"		"	"	"	1	"	3	1	Shibaura	
Songpyong	600	200	"	"		"	"	"	1	"	2	1	"	
Parwön	2250	750	66	22		V-V	"	"	1	"	3	1	Nishijima	
"	300	100	22	3.3		Δ-Δ	"	"	1	"	3	1	Hidachi	
Maengchungni	3000	1000	66	22	3.3	"	"	"	1	"	3	1	"	
"	600	200	22	3.3		"	"	"	1	"	3	1	Shibaura	
Yongmi	100	300	22	3.3		"	"	"	1	"	3	1	"	
Unsan	100	200	"	"		"	"	"	1	"	6	1	"	
Wölli	600	100	"	"		"	"	"	1	60	3	1	Shibaura	
Toksan	600	300	22	3.3		"	"	"	1	60	2	1	Germany	Cement
Mandal	3750	1895	44	"		"	Indoor	Water cooling	1	60	2	1	"	

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor Indoor or	Cooling Method	Phase	Frequency	Number			Remarks
			1st	2nd	3rd						Common Use	Spare	Maker	
Mandal	600	100	44	3.3		Δ-Δ	Outdoor	Self cooling	1	60	6			Cement
"		300	66	"		"	"	"	1	"		3	Nishijima	"
Kangdong	750	250	44	"		"	"	"	1	"	3	1	Hidachi	Coal Mine
"	150	50	"	"		"	"	"	1	"	3	4		"
"		75	"	"		"	"	"	1	"	3			"
"		100	"	"		"	"	"	1	"		6		"
"		50	"	"		"	"	"	1	"		3		"
Sungbo Cement	3600	1200	66	"		"	"	"	1	"	3	1		"
Toksan	1500	500	"	"		"	"	"	1	"	3		Hidachi	"
Hamhung	4500	1500	"	"		"	"	"	1	"	3	3		Mine
Kongpo	516	300	"	"		V-V	"	"	1	"	3	1		Cableway
Suan	3000	1000	"	"		Δ-Δ	"	"	1	"	3	3	Hidachi	Gold Mine
Holtong	1200	400	"	"		"	"	"	1	"	3	1	"	"
Sunchon Chemistry	17300	6000	"	"		V-V	"	"	1	"	4		Takaoka	Chemistry
"	6000	600	"	"		Δ-Δ	"	"	3	"	1		"	"
"	1500	500	"	"		"	"	"	1	"	3		Fuji	"
Tokchon Coal Mine	1500	500	"	"		"	"	"	1	"	3	1	Hidachi	Coal Mine
Taeyudongq	2250	750	"	22	3.3	"	"	"	1	"	3	4		Mine
Taesong	600	200	22	3.3		"	"	"	1	"	3		Fuji	"
Changnim	1200	200	"	"		"	"	"	1	"	6	1	Hidachi	"
Anju Coal Mine	4500	1500	66	"		"	"	"	1	"	3	1		Coal Mine
"	900	300	22	3.3		"	"	"	1	"	3	1	"	"
Unhung	600	200	"	"		"	"	"	1	"	3		Shibaura	Pumping
Chondong	600	300	"	"		"	"	"	1	60	3		Osaka	Mine
Kumsong	600	300	"	"		"	"	"	1	"	3			Irrigation
Yongwon	400	900	"	"		"	"	"	1	"	3		Shibaura	Iron Mine
Yongmun	950	150	"	"		"	"	"	1	"	3	1	"	Mine
Unsan Mine (Pukchin)	2250	750	66	22	3.3	"	"	"	1	"	3	1		"
"		300	22	3.3		"	"	"	1	"		8		"
Unsan Mine (Chilli)	750	250	"	"		"	"	"	1	"	3			"
Unsan Mine (Sambong)	260	650	"	"		"	"	"	1	"	2			"

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor Indoor	Cooling Method	Phase	Frequency	Number		Maker	Remarks
			1st	2nd	3rd						Common use	Spare		
Unsan Mine (Kamsuryong)	450	150	22	3.3			Outdoor	Self cooling	1	60	3			Mine
Unsan Mine (Yichon)	300	100	"	"		"	"	"	1	"	3			"
Unsan Mine (Wontam)	1500	50	11	"		"	"	"	1	"	3			Coal
"		75	"	"		"	"	"	1	"		3		"
"		100	"	"		"	"	"	1	"	2	3		"
Namdong (No.1)	4500	1500	66	22	3.3	"	"	"	1	"	3	1	Hidachi	
"	1500	500	"	"		"	"	"	1	"	3		Shibaura	
Namdong (No.2)	4500	1500	"	"	3.3	"	"	"	1	"	3	1	Osaka	
"	3000	1000	"	3.3		"	"	"	1	"	3	1	Hidachi	
Torori	3000	1000	"	"		"	"	"	1	"	3	1	Fuji	
Taepyeong	500	300	22	"		"	"	"	1	"	3		Shibaura	
Kangson	500	300	"	"		"	"	"	1	"	3		Fuji	
Wonsup	520	150	"	"		V-V V-V	"	"	1	"	4		Shibaura Mitsubishi	
Udangni	300	100	"	"			"	"	1	"	3		Hidachi	
Machamni	87	50	"	"		V-V	"	"	1	"	2		"	
Machamni	87	50	"	"		"	"	"	1	"	2		Osaka	
Machamni	450	150	"	"			"	"	1	"	3		Hidachi	
Chonghori	300	100	22	3.3		"	"	"	1	"	3		Shibaura	
Pungchong	600	200	"	"		"	"	"	1	"	3		"	
Mundong	173	100	"	"		V-V	"	"	1	"	2		"	
Chinjidong	1500	600	66	3.3			"	"	1	"	3		Hidachi	
Kangson Steel Mill	15000	6000	"	11		"	"	"	1	"	3		Mitsubishi	Steel
"	15000	5000	11	"		"	"	"	1	"	3		"	"
Kiyang Water for industry	600	200	22	"		"	"	"	1	"	3		Fuji	"
Taepo	750	250	11	3.3		"	"	"	1	"	3	1	Shibaura	Coal Mine
Nampo Zinc Refinery	10500	3500	"	"		"	"	"	1	"	3	1	Hidachi	Refinery
Nampo Chemistry	1500	500	"	"		"	"	"	1	"	3		"	Chemistry
Nampo Light Metal (No.1)	25000	12500	66	11		"	"	"	3	"	2	2	Meiden	Light Metal
(No.2)	12000	4000	"	3.3		"	"	"	1	"	3		Fuji	"

Name of Substations	Output KVA	Capacity KVA	Voltage 1st 2nd 3rd	Connecting Method	Outdoor Indoor	Cooling Method	Phase	Frequency	Number Common Use Spare	Maker	Remarks
Kiyang	10000	10000	66 11	"	Outdoor	Self Cool- ing	3	60	1	Fuji	Chemistry
Chemistry	1500	500	" 22	"	"	"	1	"	3	Shibaura	"
"	600	200	22 3.3	"	"	"	1	"	3	"	"
Taealli	5070	5000	66 11	V-V	"	"	1	"	2	Shibaura	
"		2000	" 3.3	"	"	"	1	"	4	"	
"	3000	1000	11 "	"	"	"	1	"	3	1	"
Kanggye	4500	1500	66 "	"	"	"	1	"	3	Osaka	
"		500	" "	"	"	"	1	"	4	Shibaura	
Munam	2250	750	" "	"	"	"	1	"	3	Meiden	
Pyŏlha	172	100 50	" "	V-V	"	"	1	"	100x1 50x2	Hidachi	
Manpb	1300	750	" "	"	"	"	1	"	2	"	
Unbong	566	500	" "	"	"	"	1	"	2	"	
Sijung	86	50	" "	"	"	"	1	"	2	Osaka	
Unsong	2250	750	66 22	V-	"	"	1	"	3	1	Shibaura
"	300	100	22 3.3	"	"	"	1	"	3	"	
Ansil	1300	750	66 "	V-V	"	"	1	"	2	"	
Chungam	600	200	22 "	"	"	"	1	"	3	1	Hidachi
Koin	300	100	" "	"	"	"	1	"	3	Shibaura	
"		50	" "	"	"	"	1	"	4	Hidachi	
Manari	1500	500	66 3.3	"	"	"	1	"	3	"	
Koam	1500	500	" "	Y-A	"	"	1	"	3	"	
Sinwŏn	1500	500	66 22	"	"	"	1	"	3	"	
Pangdanmyŏng	1200	200	22 3.3	"	"	"	1	"	6	"	
Tongam	2250	750	66 "	"	"	"	1	"	3	1	Shibaura
Chungha	1500	500	" 22	"	"	"	1	"	3	1	"
"	173	100	22 3.3	V-V	"	"	1	"	2	"	
Yŏnhadong	1500	750	11 33	"	"	"	1	"	3	Hidachi	
"	1300	500	66 33	"	"	"	"	"	"	"	
Chŏsan	225	75	22 3.3	"	"	"	1	"	6	Osaka	
Tongnogang	173	100	11 "	V-V	"	"	1	"	2	"	
Unsiŏ	300	100	22 "	"	"	"	1	"	3	Hidachi	
Haeju	3600	1200	66 22 3.3	Y-A	"	"	1	"	3	1	"

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor Indoor or	Cooling Method	Phase	Frequency	Number		Maker	Remarks
			1st	2nd	3rd						Common use	Spare		
Songnim	200	50150	66	3.3		V-V	Outdoor	Self Cooling	1	60	2		Shibaura Osaka	
"	300	100	"	"		"	"	"	1	"	3		Osaka	
Sariwon	2250	750	"	22		"	"	"	1	"	2		Shibaura	
"	3100	700	"	3.3		"	"	"	1	"	3		Hidachi	
"	2580	1500	"	"		V-V	"	"	1	"	2		"	
Namchon	2250	750	"	22 3.3		"	"	"	1	"	3	1	"	
Chaeryong	3460	1000	"	"		V-V	"	"	1	1	4		Shibaura	
"	2250	750	"	"		"	"	"	1	60	3	1	Fuji	
"	900	300	20	3.3		"	"	"	1	"	3		Shibaura	
Kyejong	4500	1500	66	22		X-	"	"	1	"	3	1	Hidachi	
"	173	100	22	3.3		V-V	"	"	1	"	2	1	"	
Simchon	300	100	"	"		"	"	"	1	"	3	2	Shibaura	
Hukkyo	300	100	"	"		"	"	"	1	"	3		Hidachi	
Anak	900	300	"	"		"	"	"	1	"	3		Shibaura	
Hwangju	900	300	"	"		"	"	"	1	"	3		Fuji	
Sinhwanpo	516	150	"	"		V-V	"	"	1	"	4		Mitsubishi	
Matari	1200	200	"	"		"	"	"	1	"	6	1	Shibaura	
Samchon	86	50	"	"		V-V	"	"	1	"	3		Hidachi	
Supung Power Plant	400000	100000	156	225		A-Y	"	Water Cooling	3	50 60	4	1	Shibaura	
Supung	180000	10000	"	66		"	"	"	3	60	3		"	
"	6000	1500	"	3.3		"	Indoor	Self Cooling	1	"	3	1	"	
"	3100	100	"	"		"	"	"	1	"	3	1	"	
"	3600	600	3.3	22		"	"	"	3	"	4	2	"	
Hochon-gang (No. 1)	160000	80000	10	270		A-Y	Outdoor	Water Cooling	3	"	2		"	Power Plant
" (No. 2)	80000	40000	"	"		"	"	"	3	"	2		"	"
" (No. 3)	40000	40000	"	100 220		"	"	"	3	"	1		"2	"
" (No. 3)	74000	37000	"	"		"	"	"	3	"	2		"	"
" (No. 4)	80000	40000	"	110		"	"	"	3	"	2		"	"
" (No. 4)	7000	3000	"	66		"	"	Self Cooling	3	"	3		Hidachi	"

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor or Indoor	Cooling Method	Phase	Frequency	Number		Maker	Remarks
			1st	2nd	3rd						Common Use	Spare		
Puchŏn-gang (No. 1)	144000	36000	11	110		Δ-Y	Outdoor	Water Cooling	3	60	4	1	Shibaura	Power Plant
" (No. 2)	46000	23000	"	"		"	"	"	3	"	2	1	Fuji	"
" (No. 3)	26664	26640	"	66		"	"	Self Cooling	3	"	4		"	"
" (No. 4)	12999	4333	"	110		"	"	Water Cooling	1	"	3	1	Shibaura	"
Yonghŭng-gang Power Plant	750	250	3.3	22		Δ-Y	"	Self Cooling	1	"	30	1	"	
Changjin-gang (No. 1)	160000	40000	11	110		Δ-Y	"	"	3	"	4	1	"	
" (No. 2)	240000	60000	11	154		"	"	Outdoor Cooling	3	"	4		"	
" (No. 3)	46500	15500	11	110		"	"	"	3	"	3		"	
" (No. 4)	54000	18000	11	110		"	"	"	3	"	4		"	
" (No. 4)	9000	8000	66	154		"	"	"	"	"	3	1	"	
" (No. 2)	136000	45000	11	110		"	"	"	3	"	3		"	
Hwachŏn	60000	30000	10	154	16	Δ-Y	"	Self Cooling	3	"	2		Hidachi	
Chungdaeri (No. 1)	4125	1375	66	66		-	"	"	1	"	3		Shibaura	
" (No. 2)	4800	1600	66	66		"	"	"	1	"	3	1	Hidachi	
Haengchŏlli	4125	1375	"	"		"	"	"	1	"	3	1	Shibaura	
Sinilli	3300	1100	"	"		"	"	"	1	"	3	1	Hidachi	
Songmok	600	200	22	3.3		"	"	"	1	"	3	1	Osaka	
Talchŏn	86	50	"	"		V-V	"	"	1	"	2	1	Hidachi	
Sugyo	173	100	"	"		"	"	"	1	"	2	1	"	
Sinchŏn	1200	400	"	"		Δ-Δ	"	"	1	"	3		Fuji	
"	3460	2000	"	"		V-V	"	"	1	"	2		Mitsubishi	
Wandong	600	200	"	"		-	"	"	1	"	3	1	Osaka	
Suktal	300	100	"	"		"	"	"	1	"	3		Hidachi	
Sinmak	600	200	"	"		"	2	"	1	"	3		Osaka	
Sŏhŭng	600	200	"	"		"	"	"	1	"	3		Shibaura	
Singye	173	100	"	"		V-V	"	"	1	"	2		Nishijima Shibaura	
Pangyo	300	100	"	"		Δ-Δ	"	"	1	"	3		Shibaura	
Chisŏk	300	100	"	"		"	"	"	1	"	3		Osaka	
Pŏpchŏn	300	100	"	"		"	"	"	1	"	3		Nishijima	

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor or Indoor	Cooling Method	Phase	Frequency	Number		Maker	Remarks
			1st	2nd	3rd						Common Use	Spare		
Kumgyo	300	100	22	3.3			Outdoor	Self Cooling	1	60	3		Hidachi	
Hanpb	86	50	"	"		V-V	"	"	1	"	2		"	
Pyongsan	50	50	"	"		-	"	"	1	"	1		"	
Mulgae	30	30	"	"		-	"	"	1	"	1		Osaka	
Chongsu	52	30	"	"		V-V	"	"	1	"	2		Hidachi	
Unbong	50	50	"	"		-	"	"	1	"	1		"	
Yshydn	688	200	"	"		V-V	"	"	1	"	"	2	"	Mine
Yultong	860	500	"	"		"	"	"	1	"	2	2	Shibaura	"
Yongdangpb	6000	1000	66	3.3		-	"	"	1	"	6		Hidachi	Cement
Haeju Refinery	1290	750	"	"		V-V	"	"	1	"	2	1	Osaka	"
Madong Cement	3000	100	"	"		-	"	"	1	"	3		Shibaura	"
Sariwon Coal Mine	1500	500	"	"		"	"	"	1	"	3	1	Hidachi	Coal
Kijong	150	50	22	"		"	"	"	1	"	3		Mitsubishi	Mine
Nagydn	600	200	"	"		"	"	"	1	"	3	1	Hidachi	"
Hwanghae Refinery	12000	4000	66	"		"	"	"	1	"	3	1	Shibaura	Refinery
Sindok Mine	1500	500	"	"		"	"	"	1	"	3		"	Mine
Uilyul	600	200	22	"		"	"	"	1	"	3		"	
Tongchhangpb	600	100	"	"		"	"	"	1	"	6		Shibaura Nishijima	
Pyongyang	4500	1500	154	66	11	Y-Y	"	Water Cooling	1	"	3	1	Shibaura	
"	4500	1500	"	"	"	"	"	Self Cooling	1	"	3		"	
"	2100	700	66	3.3		Δ-Δ	"	"	21	"	3	1	"	
"	1500	500	22	"		"	"	"	1	"	3	1	"	
Chochon	20000	100000	11	66		Y-Y	"	Wind Cooling	3	"	2		"	
"	2250	750	66	22		Δ-Δ	"	Self Cooling	1	"	3	1	"	
"	866	500	"	3.3		V-V	"	"	1	"	2		"	
Unsan	30000	15000	154	66		Y-Δ	"	"	3	"	2		"	
"	1200	400	66	3.3		Δ-Δ	"	"	1	"	3	1	"	
Nampb	10000	10000	220	66		Y-Y	"	Wind Cooling	3	"	1		"	
"	412	250	66	33		V-V	"	Self Cooling	2	"	2	2	Osaka	

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor Indoof.	Cooling Method	Phase	Frequency	Number		Maker	Remarks
			1st	2nd	3rd						Common use	Spare		
Tasati	200000	100000	220	66		Y-Y	Outdoor	Wind Cooling	3	60	1	1	Shibaura	
Kwanpyŏng	4000	4000	66	22		-	"	Self Cooling	1	"	1		Shibaura	
Sokt'ang Spa	4000	4000	"	"		"	"	"	1	"	1		Hidachi	
Haeso	346	200	22	3.3		V-V	"	"	1	"	2			
"	450	150	"	"		-	"	"	1	"	3	1		
Ch'ŏngsan	600	200	"	"		"	"	"	1	"	3			
Yŏnho	432	250	"	"		V-V	"	"	1	"	2			
"	341	200	"	"		"	"	"	1	"	2			
Ch'ŏlsan	600	200	"	"		-	"	"	1	"	3			
Pugŏm	300	100	"	"		"	"	"	1	"	3			
Paengnyang	900	300	66	22		V-V	"	"	1	"	2	1		
Pungnyul	512	300	"	"		"	"	"	1	"	2	1		
Chungsan	300	100	"	"		-	"	"	1	"	3			
Sŏch'ŏn	520	300	"	"		V-V	"	"	1	"	2			
Kalma (No.2)	5000	2500	"	"		-	"	"	3	"	2		Hidachi	
"	500	500	22	3.3		"	"	"	"	"	1		Osaka	
Taegang	150	50	66	"		"	"	"	1	"	3		"	
Ullim	600	200	22	"		"	"	"	1	"	3		Hidachi	
Munpyŏng	150	50	"	"		"	"	"	1	"	3		Hidachi Shibaura	
Munpyŏng Refinery	1500	250	"	"		"	"	"	1	"	6		Hidachi	Refinery
Munpyŏng Light Metal	1800	600	"	"		"	"	"	1	"	3	1	Fuji	Light Metal
Sangdong	3500	1000	"	"		V-V	"	"	1	"	4		Shibaura Hidachi	
Kalma	3000	1000	"	"		A-A	"	"	"	"	3		Hidachi	
Sŏsŏngni	600	200	"	"		"	"	"	1	"	3		Shibaura Hidachi	
Paehwa	100	200	"	"		"	"	"	1	"	3		Hidachi	
Iryŏng	1500	500	22	3.3		"	"	"	1	"	3		"	
"	4500	1500	66	22		"	"	"	1	"	3	1	Shibaura	
"	2700	300	22	3.3		"	"	"	1	"	9	1	Hidachi	
Hŭngnam	100000	50000	110	11		Y-A	Water Cooling	Water Cooling	1	"	6	1	Shibaura	Chemical factory

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor or Indoor	Cooling Method	Phase	Frequency	Number			Remarks
			1st	2nd	3rd						Common use	Spare	Maker	
Pongung	102000	34000	110	11		Y-	Outdoor	Water Cooling	3	60	4		Shibaura	Chemical Factory
"	20000	20000	"	66		"	"	"	3	"	1		"	"
"	5000	5000	"	"		"	"	"	"	"	1		"	"
Hungnam	160000	50000	220	11		"	"	"	"	"	2		"	"
Hagal	900	300	66	3.3		-	"	Self cooling	1	"	3		"	
Chiktong	1200	200	"	"		"	"	"	"	"	6		Mitsubishi	
Changjin-gang (No. 4)	9000	3000	110	34.7		-Y	"	Water Cooling	1	"	3		W.H.	
Pungsan	900	300	22	3.3		-	Indoor	Self Cooling	1	"	3		Mitsubishi	
Chonbulsan	150	50	22	3.3		"	Outdoor	"	1	"	3		Osaka	
Puchongang (No. 4)	300	100	11	"		"	"	"	1	"	3		"	
Taejo	150	50	22	"		"	"	"	1	"	3		"	
Unbong	2580	2500	66	22		"	"	"	3	"	1		Hidachi	
"	600	200	22	3.3		"	"	"	1	"	3		"	
Inhung	3000	1000	66	22		"	"	"	1	"	3		Shibaura	
"	600	200	22	3.3		"	"	"	1	"	3		"	
"	150	50	"	"		"	"	"	"	"	3		"	
Wangsan	100	200	"	"		"	"	"	"	"	3		Hidachi	
Munsan	129	75	"	"		V-V	"	"	"	"	2		Meiden	
Wonpo	172	100	"	"		"	"	"	"	"	2		Hidachi	
Chinpyong	600	200	"	"		-	"	"	"	"	3		Shibaura	
Yonghung	1050	350	"	"		"	"	"	"	"	3		Hidachi	
Yongban	100	50	"	"		"	"	"	3	"	2		Osaka	
Yonghung Gold Mine	36	50	"	"		V-V	"	"	1	"	2		Nishijima	
Sanggyongtun	300	100	22	3.3		-	"	"	1	"	3		Hidachi	
Kowon Coal Mine (No. 1)	900	300	"	"		"	"	"	1	"	3		Osaka	Coal Mine
" (No. 2)	900	300	"	"		"	"	"	1	"	3		"	"
Sangok	750	250	"	"		"	"	"	1	"	3		"	"
Kowon	520	300	"	"		V-V	"	"	"	"	2		Hidachi	
Wonan	8660	2500	66	22		"	"	"	"	"	4		Shibaura	
2 "	3600	1000	22	3.3		-	"	"	"	"	3		Hidachi	

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor Indoor	Cooling Method	Phase	Frequency	Number			Remarks
			1st	2nd	3rd						Common use	Spare	Maker	
Parwiri	600	200	22	3.3		-	Outdoor	Self Cooling	1	60	3		Hidachi	
Sinlung Coal Mine	900	300	"	"		"	"	"	1	"	3		"	Coal Mine
Munchon Coal Mine	100	200	"	"		"	"	"	1	"	3		Shibaura	"
Munchon	300	100	"	"		"	"	"	1	"	3		Hidachi	
Puksong	600	200	"	"		"	"	"	1	"	3		"	"
Chongnaeri	9000	1500	66	22	3.3	"	"	"	1	"	6		Hidachi Osaka	
Chinhung	900	300	22	3.3		"	"	"	"	"	3		Hidachi	
Sogwangsa	600	200	"	"		"	"	"	1	"	3	1	"	
Hamhung (No.1)	6000	6000	66	"		Y-A	"	"	3	"	1		Mitsubishi	
"	1730	6000	"	22		V-V	"	"	1	"	2		Shibaura	
" (No. 2)	4500	1500	"	3.3		-	"	"	1	"	3		Hidachi	
"	2250	750	"	"		"	"	"	1	"	3		Meiden	
Samho	90	30	22	3.3		"	"	"	1	"	3		Osaka	
Hongwon	2100	1500	11	22		V-V	"	"	1	"	2		Hidachi	
"	600	200	22	3.3		-	"	"	1	"	3		Shibaura	
Unpo	600	200	"	"		"	"	"	1	"	3		Mitsubishi	
Samcha	520	300	"	"		V-V	"	"	1	"	2		Shibaura	
Yonpo	600	200	"	"		-	"	"	1	"	3		Osaka	
Chongpyong	900	300	"	"		"	"	"	1	"	3		Mitsubishi	
Sondok	600	200	"	"		"	"	"	1	"	3		Meiden	
"	450	150	"	"		"	"	"	1	"	3		Osaka	
Pupyong	35	50 20	"	"		V-V	"	"	1	"	2		Shibaura Osaka	
Sinsang	300	100	22	3.3		-	"	"	1	"	3		Osaka	
Sokku	600	200	"	"		"	"	"	1	"	3		Shibaura	
Yanghwa	344	200	"	"		V-V	"	"	1	"	2		Hidachi	
Sinpo	692	400	"	"		"	Indoor	"	"	"	2	1	Fuji	
Toksong	344	200	"	"		"	Outdoor	"	"	"	2		Hidachi	
Nahung	3000	1000	66	22		A -	"	"	3	"	3			
"	1730	1000	22	3.3		"	"	"	3	"	2			
" (No.2)	4500	1500	66	"		"	"	"	1	"	3		Shibaura	

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor Indoor	Cooling Method	Phase	Frequency	Number			Remarks
			1st	2nd	3rd						Common use	Spare	Maker	
Sinpukchong	450	150	22	3.3		-	Outdoor	Self Cooling	1	60	3		Hidachi	
"	300	100	"	"		"	"	"	1	"	3		Hidachi	
Pukchong	700	300	"	"		"	"	"	1	"	3		Shibaura	
"	200	200	"	"		"	"	"	1	"	1		Hidachi	
Ilgon	1732	1000	66	22		V-V	"	"	1	"	2		Shibaura	
"	900	300	22	3.3		-	"	"	"	"	3		Hidachi	
Hyesan	1200	200	22	"		"	"	"	1	"	6		Shibaura	
Iwon Iron Mine	600	200	"	"		"	"	"	1	"	3		Hidachi	
"	900	300	"	"		"	"	"	1	"	3		"	
Talchon	900	300	66	"		"	"	"	1	"	3		"	
Puktu	900	300	22	"		"	"	"	1	"	3		"	
Pudong	600	200	"	"		"	"	"	1	"	3		Shibaura	
"	900	300	"	"		"	"	"	1	"	3		"	
"	150	90	"	"		"	"	"	1	"	3		Osaka	
Chonnam	600	200	"	"		"	"	"	1	"	3		Shibaura	
Omongni	2000	1000	66	22		"	"	"	3	"	2			
"	1500	500	"	"		"	"	"	1	"	3	1		
"	1000	1000	22	3.3		"	"	"	3	"	1			
"	150	50	"	"		"	"	"	1	"	3			
"	200	200	"	"		"	"	"	1	"		3		
Chongdok	4500	1500	66	22		"	"	"	1	"	3		Shibaura	
Waryong	1800	300	22	3.3		"	"	"	1	"	6		"	
Haksu	1200	200	"	"		"	"	"	1	"	6	1	"	
Yangam	1000	1000	"	"		"	"	"	5	"	1	1	Hidachi	
Talho	3000	1000	"	"		"	"	"	5	"	3		"	
Hangnam	600	200	"	"		"	"	"	5	"	3		Shibaura	
Haksang	600	200	"	"		"	"	"	1	"	3		"	
Obok	600	200	"	"		"	"	"	1	"	3		"	
Kilchu	1050	350	"	"		"	"	"	1	"	3	1	"	
Agan	600	200	"	"		"	"	"	1	"	3		"	
Changbaek	346	200	"	"		V-V	"	"	"	"	2		"	
Nodong	346	200	"	"		"	"	"	1	"	2		"	

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor Indoor or	Cooling Method	Phase	Frequency	Number			Remarks
			1st	2nd	3rd						Common use	Spare	Maker	
Yangsa	300	100	22	3.3		-	Outdoor	Self Cooling	1	60	3		Shibaura	
Saengjang	150	50	60	"		"	"	"	"	"	3		"	
Chongjin (No.2)	20000	4000	66	22		Y-	"	"	3	"	5		Hidachi	
"	6000	6000	"	3.3		"	"	"	3	"	1		Mitsubishi	
"	1500	500	22	3.3		-	"	"	3	"		3	Hidachi	
Musan	1200	6000	66	3.3		Y-	"	"	3	"	2		Mitsubishi	
Chul	6000	2000	"	22		"	"	"	1	"	3	1	Osaka	
"	1000	1000	22	3.3		"	"	"	3	"	1	1	Hidachi	
Komusan	3000	1000	11	"		-	"	"	1	"	3	1	Osaka	
Sunam	3000	1000	22	"		"	"	"	3	"	3		Hidachi	
Tonghae	4000	2000	22	"		Y-	"	"	3	"	2		"	
Tomaktong	350	200	"	"		"	"	"	1	"	2		"	
Nanam	866	500	66	"		V-V	"	"	1	"	2		Osaka	
Kyongsong	500	500	"	"		-	"	"	3	"	1		"	
Saenggyong	500	500	"	"		"	"	"	3	"	1		Mitsubishi	
Yonghyon	500	500	"	"		"	"	"	3	"	1		Osaka	
Hoemun	500	500	"	"		"	"	"	3	"	1		Mitsubishi	
Odaejin	600	200	"	"		"	"	"	1	"	3		Hidachi	
Chunam	300	100	"	"		"	"	"	1	"	3		Osaka	
"	500	500	22	3.3		"	"	"	3	"	1		"	
Changdok	260	150	"	"		V-V	"	"	1	"	2		Osaka	
Myonggyong	225	75	"	"		-	"	"	1	"	3		"	
Myongnam	75	25	"	"		"	"	"	1	"	3		"	
Pubukkong	2400	800	24	"		Y-	"	"	1	"	3	1	Shibaura	
Yongan	750	750	66	"		"	"	"	3	"	1		Osaka	
Hoeryong	350	200	22	"		V-V	"	"	1	"	2	1	Shibaura	
"	1200	400	"	"		-	"	"	1	"	3		Mitsubishi	
Yongan	4000	2000	66	22		Y-	"	"	3	"	2		Shibaura	
"	300	100	22	3.3		-	"	"	3	"	3		Fuji	
Kungsim	1500	500	66	3.3		"	"	"	1	"	3		Shibaura	
Turim	500	500	22	3.3		"	"	"	3	"	1		Mitsubishi	
"	750	250	"	"		"	"	"	1	"	3		Hidachi	

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor Indoor	Cooling Method	Phase	Frequency	Number		Maker	Remarks
			1st	2nd	3rd						Common use	Spare		
Namyang	620	300	66	3.3		V-V	Outdoor	Self Cooling	1	60	2		Nishijima	
Yusŏn	1950	650	22	"		-	"	"	1	"	3		"	
Pungin	1800	600	66	3.3		"	"	"	1	"	3		Shibaura	
Sangsambong	300	100	22	"		"	"	"	1	"	3		Hidachi	
Chungdo	100	50	"	"		"	"	"	3	"	2		Osaka	
Soam	100	50	"	"		"	"	"	3	"	2		Osaka	
Tonggwŏn	150	50	"	"		"	"	"	3	"	3		"	
Hakpŏ	1300	750	66	"		V-V	"	"	1	"	2		Shibaura	
Chongsŏng	750	750	"	22		-	"	"	3	"	1		Osaka	
"	225	75	22	3.3		"	"	"	1	"	3		Fuji	
Hungyung	900	300	66	"		"	"	"	1	"	3		Shibaura	
Kilgonwŏn	3000	1000	"	"		"	"	"	1	"	3		Osaka	
Unggi	900	300	"	"		"	"	"	1	"	3		Shibaura	
Kwanghae	900	300	"	"		"	"	"	1	"	3		Osaka	
Pugŏ	300	300	22	"		"	"	"	3	"	1		Hidachi	
Chŏkchi	1000	500	"	"		"	"	"	3	"	2		Osaka	
Najin	1500	500	66	3.3		"	"	"	1	"	3		"	
Kumhwa	300	100	"	"		"	"	"	1	"	3		Shibaura	
Kumsŏng	2100	350	"	"		"	Indoor	"	"	"	6	2	"	
Yangjiri	2700	900	"	"		"	"	"	1	"	3	1	Mitsubishi	
"	3000	1000	"	22		"	Outdoor	"	"	"	3		Hidachi	
Changdo	3000	1000	"	"		"	"	"	"	"	3	1	Fuji	
Sinan	300	100	"	3.3		"	"	"	"	"	3		Mitsubishi	
Pyŏnggang	300	100	22	"		"	Indoor	"	"	"	3		Hidachi	
Changjŏn	600	300	"	"		"	"	"	"	"	3	1	"	
Kohŏ	600	200	"	"		-	Outdoor	"	"	"	3	1	Shibaura	
Haknang	1500	500	"	"		"	"	"	"	"	3	1	Hidachi	
Mundŏng	300	100	"	"		"	"	"	"	"	3		Shibaura	
Hwagye	87	50	"	"		V-V	Indoor	"	"	"	2		Hidachi	
Silli	300	100	"	"		-	Outdoor	"	"	"	3		"	
Yangsong	600	200	"	"		"	"	"	"	"	3	1	Shibaura	
Yŏnchŏn	1200	400	"	"		"	"	"	"	"	3	1	Hidachi	

Name of Substations	Output KVA	Capacity KVA	Voltage			Connecting Method	Outdoor Indoor or	Cooling Method	Phase	Frequency	Number			Remarks
			1st	2nd	3rd						Common use	Spare	Maker	
Sabuk	150	50	66	3.3		Δ-Δ	Outdoor	Self Cooling	1	60	3		Hidachi	
Sokcho	600	200	22	"		"	"	"	1	"	3		Shibaura	
Yangyang	3000	1000	66	22	3.3	Y-Y	"	"	"	"	3	1	Hidachi	
Sambang	4000	4000	"	"		Δ-Δ	"	"	3	2	1		Fuji	Electric Railroad
"	75	75	22	66		"	"	"	3	"	1		"	"
Pokkye	4000	4000	66	22		"	"	"	3	"	1		Shibaura	"
" (354 KV)	75	75	22	66		"	"	"	1	"	1		"	"
Munpyōng	1500	15000	154	66		"	"	"	3	"	1		"	
Chōngjin	100000	100000	120	"		Y-Y	"	"	3	"	1		"	
"	20000	20000	100	"		Y-Δ	"	"	3	"	1		"	
"	30000	15000	"	"		Y-Y	"	"	3	"	2		Mitsubishi	
Aoji	34500	34500	"	"		Y-Δ	"	"	3		1	1	Shibaura	
"	5000	5000	"	"		"	"	"	"		1		Fuji	
Kilchu	10000	3333	110	66		"	"	"	1		3	1	Mitsubishi	
Sinkilchu	40000	40000	110	11		"	"	"	3		1		Shibaura	
Yondupyōng	900	300	66	33		Δ-Δ	"	"	1		3	2	Osaka	
Yusang	500	300	"	"		Y-Y	"	"	1		3	1	Osaka Nishijima	
Tanchon	300	100	"	"		Δ-Δ	"	"	1		3		Osaka	
Ip'a	1000	500	66	22		"	"	"	3	"	2	1	"	
Kōjin	600	200	22	3.3		"	"	"	1	"	3			

(1) Generation of Electric Power

Power Plant	Power Station	Generating Capacity	Days	Hours	Average Power (KV)	Maximum Power (KV)	Average Maximum Power	Rate of Burden (percent)
Supung	5000	37,474,000 (KWH)	30	720 H	52,047	72,000	65,000	80.0
	6000	103,808,500	"	"	144,178	212,000	157,633	92.0
	Total	141,282,500	"	"	196,226	275,000	213,133	90.0
Power Station								
Changjin -gang	No. 1	54,864,400	"	"	76,200	121,400	94,813	80.0
	No. 2	37,558,600	"	"	52,165	85,200	67,580	70.6
	No. 3	14,505,400	"	"	20,563	34,600	26,803	78.6
	No. 4	12,944,000	"	"	17,978	28,000	23,800	75.3
	Total	120,172,400	"	"	160,906	203,500	95,633	85.5
Power Station								
Puchon	No. 1	43,891,600	"	"	609,597	78,000	68,766	89.0
	No. 2	12,915,000	"	"	179,375	23,000	20,600	90.0
	No. 3	4,401,120	"	"	61,127	10,800	81,147	75.3
	No. 4	2,412,500	"	"	33,507	6,100	45,337	73.0
	Total	63,619,620	"	"	883,606	170,900	120,064	82.0
Power Station								
Hochon-gang	No. 1	53,627,000	"	"	74,483	106,000	85,433	82.0
	No. 2	25,469,000	"	"	35,375	50,000	42,833	72.0
	No. 3	19,182,000	"	"	26,642	39,000	32,349	82.7
	No. 4	21,834,000	"	719H-30	30,328	40,000	34,300	88.0
	Total	120,112,000	"	720	166,822	-	-	-
Power Station								
Puryong	No. 1	4,502,520	"	719H-55	6,249	10,320	7,037	89.0
	No. 2	485,376	"	705H-30	674	1,392	1,016	66.0
	Total	4,987,896	"	719H-55	6,923	-	-	-
	TOTAL	125,099,897	"	720	173,750	-	-	-
Power Station								
Kangwon	No. 1	40,560	9	116H-20	56	516	108	16.0
	No. 2	2,049,160	30	720	2,846	6,284	39	71.0

Power Plant	Power Station	Generating Capacity (KWH)	Days	Hours	Average Power (KV)	Maximum Power (KV)	Average Maximum Power	Rate of Burden (percent)
Kangwŏn	No.1	40,560	9	116H-20	56	516	108	16.0
	No.2	2,049,160	30	720	2,846	6,284	39	71.0
	No.3	376,800	17	376H-10	523	3,100	1,007	29.0
	No.4	347,040	15	326	482	2,448	773	31.0
	Total	2,813,560	30	720	2,908	11,796	5,624	70.0
Hwachŏn	Hwachŏn Power Station	4,291,560	30	678H-36	5,361	13,200	8,560	76.0
	Total	7,105,120	30	-	9,869	-	-	-
Grand	5000	27,474,000	30	720H	52,470	72,000	64,100	-
Total	6000	419,805,536	30	"	583,636	-	-	-
Grand Total		457,279,536	"	"	636,116	-	-	-

(2) Supply of Power

A. Transformer Substations

Name of Substation	Volume of Power Supplied	Days	Hours	Average Power (KW)	Maximum Power (KW)	Average Maximum Power (KW)	Rate of Burden (percent)
Pyŏngyang No.1	31,603,644	30	720H	43,908	67,676	-	-
Pyŏngyang No.2	10,312,732	"	"	14,303	27,053	-	-
Nampb	16,064,000	"	"	22,311	28,000	-	-
Tasato	8,922,000	"	"	12,392	21,000	14,450	94
Unsan	10,226,100	"	719H-18	14,254	21,500	18,500	96
N/W. Total	77,175,476	"	720H	107,188	-	-	-
Hŭngnam	98,759,297	"	720	137,664	206,000	144,430	-
East Hŭngnam	52,937,000	"	"	73,524	108,000	79,907	-
Yonghŭng	46,627,000	"	"	64,759	91,000	74,270	-
Pongung	33,306,248	"	"	46,258	69,500	56,980	-
Yongsŏng	6,816,776	"	"	9,468	20,000	13,903	-
Munpyŏng	4,099,500	"	211H-20	5,694	9,150	7,577	-
Pongung (66 KV)	4,196,500	"	"	5,828	10,000	8,327	-
Chŏngjin	12,109,920	"	720H	16,819	29,900	21,273	-
Aoji	7,767,900	"	"	10,789	15,139	13,114	-
Kilchu	2,359,000	"	"	3,276	6,000	4,713	-
Sinkilchu	3,057,500	"	718H-36	4,246	8,250	5,891	-
Sŏngjin	12,183,960	"	720	16,922	33,880	19,849	-
NE Total	284,219,490	"	"	334,748	-	-	-
Grand Total	361,394,960	"	"	501,936	-	-	-

B. Special Supply

User	Volume of Power Supplied	Days	Hours	Average Power	Maximum Power	Average Maxi- mum Power
Hungnam Factory	238,445,321	30	720H	336,173	369,500	339,090
Chongjin Steel Mill	1,293,200	"	719H-54	1,796	4,600	2,613
Songjin "	12,183,960	"q	720H	16,922	37,886	19,849
Kilchu Paper Mill	3,057,500	"	718H-36	4,246	8,250	5,891
Puryong Metallurgy	5,386,264	"	717H-33	7,481	-	-
Aoji Factory	7,063,200	"	719H-37	3,810	14,160	11,793
Kangson Steel Mill	5,136,000	"	717H-54	7,133	14,000	
Nampo Light Metal	365,000	"	720H	517	1,000	
Nampo Refinery	4,462,123	"	717H-23	6,197	1,108	
Pukchung Machine	212,900	"	720H	296	100	379
Sunchon Chemistry	632,741	"	"			
Chongsu "	5,442,340	"	"	7,559	2,200	14,307
Hwanghae Iron Mill						

C. Interior of Power Plants

Power Department	Power Station	Volume of Power Supplied	Days	Hours	Average Power	Maximum Power	Rate of Burden
Supung	Supung	331,490	30	720H	410		
Changjingang	Power S ⁿ		"	718H-42	94	151	
	No.1	18,128	"	720H	131	192	
	No.2	94,157	"	"	31	53	
	No.3	21,427	"	"	39	70	
	No.4	28,290	"	"	294		
	Total	212,002					
	Power Station		"	"		142	
	No.1	10,222	"	"		63	
Puchongang	No.2	45,619	"	"		23	
	No.3	16,398	"	"		21	
	No.4	14,973	"	"		249	
	Total	179,212					
	Power Station		"	719H-56	94	130	101
	No.1	65,000	"	720	40	58	60
Hochongang	No.2	33,420	"	"	54	100	57
	No.3	37,720	"	719H-55	43	90	53
	No.4	31,020	"	720H-30	36	91	54
	Puryong No.1	25,564	"	716H-30	17		
	" No.2	12,193	"	720	289		
	Total	208,918					

Power Department	Power Station	Volume of Power Supplied	Days	Hours	Average Power	Maximum Power	Rate of Burden
Kangwŏn	Hwachŏn	42,624					
	Kŭmgangsan	5,593					
	Total	48,217					
Total	Grand Total	979,888					

D. Home Use of Power Plants (Internal Power)

Power Department	Power Station	Volume of Power Supplied	Days	Hours	Average Power	Maximum Power	A.M.P.	R/B
	Power Station							
	No. 1	10,176.47	30		1413			
Changjin-gang	No. 2	11,172.33	"		163			
	No. 3	49.29	"	720	7			
	No. 4	64.80	"	"	9			
	Total	11,462.89	"	"	1592			

E. Local Burden of Each Power Plant

Power Department	Power Station	Volume of Power Supplied	Days	Hours	Average Power	Maximum Power	A.M.P.	R/B
Supŭng	Supŭng	3,966,865	30	720H	5533			
	Power Station							
	No. 1	14,465,723	"	719H-46	2037			
Changjin-Gang	No. 2	2,450	"	720	3			
	No. 3	9,151	"	"	13			
	No. 4	1,618,795	"	"	2248			
	Total	3,097,119	"	"	4301			
	Power Station							
	No. 1	109,768	30	720H				
Puchŏn-gang	No. 2	16,384	"	719H-52				
	No. 3	17,960	"	720				
	No. 4	276,810	"	"				
	Total	420,922	"	"				

(3) Electric Transmission Lines

Name of Transmission Line	Cap. of Power Trans.	Days	Hours	Avrg. Po. Transmitted	Maximum Power	Avg. Max. Power	Rate of Burden
Pyŏngyang 2nd Line	96,254,100	30	720H	133,686			
" Connecting Line	54,939,000	"	"	76,304			
" 1st Line	18,598,694	"	"	25,832			
(Transmitting 1-2)							
" 1st Line							
(Receiving 1-2)	8,596,300	"	"	11,939			
Hamgyŏng-bukto No. 1 Line	10,930,000	"	"	15,181	47,000	23,066	
Hamgyŏng-bukto No. 2 Line	17,050,000	"	"	23,687	51,000	33,766	
Hamgyŏng-namdo No. 1 Line	8,620,000	"	"	11,972	34,000	20,833	
Hamgyŏng-namdo No. 2 Line	8,560,000	"	"	11,889	34,000	23,733	
Tonghŭng South L.	51,643,000	"	709H-5	74,728	99,000		
Taedong Line	29,637,930		720	41,164	57,780	52,644	
Anshan Line	6,562,070	"	"	9,114	18,722	10,389	
Chŏngjin Line	11,061,600	"	655H-30	15,363	29,900		

(4) Volume of Power Generated and Supplied;
Comparison of Plan and Results

<u>Kind</u>	<u>Volume of Power</u>	<u>Comparison of Plan and Results</u>
Supply		
Total Volume Generated	457,279,536	Plan: 474,642,000
NE 1st Total	354,219,490	Result: 467,279,536
NW 1st Total	77,157,476	Ratio: 96.3 percent
Volume of Power Inside Plants	977,888	1948 - 438,874,676
		1949 - 407,279,536
Home Use of Plants	3,564,909	Ratio: 104.1 percent
Local Burden of Plants	20,418,473	
Transmission to China	31,180,905	
Total	422,539,141	
Percentage of Loss	100 x $\frac{457,279,536 - 422,539,141}{467,284,536}$	-7.5 percent

(5) Water Level

Place		Water Level	lm 3/5mc	m 3/5cc	Temperature		Precipitation
			Flooding Water	Water Harnessed	Highest	Lowest	
Suplung		11,622	389.53	30,917	34	11	98.6
Changjin-gang	Dam No.1	7,180	03.31		27.5	-1	54.7
	Dam No.2	3,020	37		26	-2	59.9
Oychöngang	Dam No.1	7,555	5.52	10.84	29	-1	
	Dam No.2	2,785	1.50	10.84	26	-1.5	
	Dam No.3	0.690	1.94	10.59	26	0	
Höchöngang	Yondupyöng	3.76	11.76		29	13	68.7
	Hwangsupyöng						
	öng	3.75	2.19		29	16	52.9
	Naejungni	7.46	1.22		29	12	73.5
	Sachöpyöng	6.27	4.16	20.14	31	17	104.6
	Puryöng	0.950	2.13	1,533			
Kangwön	Hwachön	175.18	68.4	15.9	31	17	55.9
	Kömgangsan	12,718	50.08	1.88	18	10	330.6

(6) Electric Accidents at Power Plants

Kind Department	TC Oa ts ae ls	H i u ts ae ls	S i u ts ae ls	No. HS dp rp al sy	Electric Shock		W a t e r M i l l	G e n e r a t o r	T r a n s f o r m e r	S w i t c h	O t h e r	T o t a l	W a t e r M i l l	G e n e r a t o r	T r a n s f o r m e r	S w i t c h	O t h e r	T o t a l
					Employees	Public												
Suplung Power	1		1									1	1					
Changjingang Power	3		2	1								2	2					
Puchöngang Power	1		1									1	1					
Höchöngang Power	4		2	2			2						2					
Kangwön Power	1			1														
Total	10		6	4			2					4	6					

Damages to Power Plants

<u>Province</u>	<u>Power Plant</u>	<u>Machines Damaged</u>	<u>Capacity</u>	<u>Quantity</u>	<u>Outline of Damages</u>
Hamgyŏng namdo	Puchŏnggang No.1 Power Station	Generator	KVA 36,000	2	On one generator, 56 armature coils cut & Burnt due to breakdown of slators; On another generator, the casing destroyed. Heavily crippled & outdoor equipments destroyed.
"	"	Transformer	11/100 KVA 36,000	1	
"	"	Iron Pipe			No.3 Iron Pipe ruined & No.4,5 Iron Pipes burst.
"	Changjingang No.1 Power q Station	Transformer	11/110 KVA 40,000	1	Two bushes (110KV), damaged but repairabl
"	"	Arc Suppressing Reactor		1	

No.1 Damages to Important Transformers Above 66KV (as of September 1950)

<u>Province</u>	<u>Name of Substation</u>	<u>Machines Damaged</u>	<u>Capacity</u>	<u>Quantity</u>	<u>Outline of Damages</u>
Hamgyŏng-bukto	Aoji	Transformer	110/11 KVA 34,500	1	Outdoor structure & bush all damaged; tank partly burst.
"	Chŏngjin No.2	"	66/22 4,000 "	2	One, damaged in bush & radiator; another, bombed out.
"	Chŏngjin No.1	"	220/66 100,000 "	1	Bushes & coolers totally destroyed.
"	"	"	110/66 15,000 "	2	One, burnt out; another, lost insulator due to bursting of tank.
"	"	"	110/66 20,000 "	1	Internal parts burnt in bombing.
"	Sŏngjin	"	110/22 10,000 "	3	Seriously burnt; outdoor equipment, Switchboard & all destroyed.
"	Kilchu Paper Mill	"	66/33 6,000 "	1	Destroyed with the factory.
"	Kilchu	"	110/66 3,333 "	2	Bush & tank partly crippled
"	Hoeryŏng	"	66/33 750 "	3	Oil leaked through bullet holes on tanks in bombing
"	Omong	"	66/22 1,000 "	2	Bushes & radiators all destroyed
"	"	"	22/33 1,000	1	" "

<u>Province</u>	<u>Name of Substation</u>	<u>Machines damaged</u>	<u>Capacity</u>	<u>Quantity</u>	<u>Outline of Damages</u>
Hamgyŏng-namdo	Hŭngnam	Transformer	110/11 KVA 50,000	7	Irreparably crippled, outdoor equipment, switchboards & building burnt.
"	"	Rotary Converter	3,500 "	45	30 percent thoroughly crippled; 7 converters repairable; other equipment destroyed.
"	Pongung	Transformer	110/11 34,500 "	2	Due to breakdown of pushings & explosion of transformer tanks, insulator oil burnt & washed away.
"	"	"	110/66 5,000 "	1	"
"	Yonghŭng	"	350/11 60,000 "	2	Due to machine-gun fire, bush damaged, tanks partly holed, and oil washed away, but repairable
"	Ŭnbong (Elec. R/R)	"	66/22 2,500 "	1	Exploded and burnt with the substation.
"	Kwanpyŏng	"	66/22 4,000 "	2	One damaged in addiator and bush during removal, but repairable; one, partly damaged through machine gunning.
"	Hongwŏn	"	66/33 750 "	3	Partly damaged through machinegunning but repairable.
Kangwŏn	Wŏnsan	"	66/22 2,500 "	2	One, inwardly burnt; one slightly damaged (repairable)
"	Kŭmhwa	"	66/33 300 "	3	All burnt & destroyed
"	Kalma	"	66/22 2,500 "	2	"
"	Yangjiri	"	66/22 900 "	3	One, inwardly burnt up; two, partly destroyed (repairable)
Pyŏngan-namdo	Pyŏngyang No.1	"	110/66/11 15,000 "	6	Three self-cooling transformers burnt; one water cooling transformers destroyed & two others externally damaged.
"	"	Arc Suppressing Reactor	19,000 "	1	Pushing (154KV) damaged; tank pierced by bullets; insulator oil washed away (repairable)

Province	Name of Substation	Machines damaged	Capacity	Quantity	Outline of Damages
Pyongan-namdo	Pyongyang No. 1	Phase modifier	15,000KVA	1	Motor damaged; coil cut by bullets, phase-regulator coil partly destroyed.
"	"	Transformer	66/33 750 "	1	Burnt up (Substation all destroyed)
"	" No.2	"	220/66 100,000 "	2	One bush damaged, tank pierced, & oil washed away one externally damaged.
"	"	Series Transformer	100,000 "	2	One, exploded and burnt; one, tank pierced & oil washed away.
"	"	Voltage Regulator	100,000 "	2	"
"	Nampo	Transformer	22/66 100,000 "	1	Internally burnt up; switchboard & outdoor equipment destroyed (irreparable)
"	"	"	100,000 "	1	"
"	"	Voltage Regulator	100,000 "	1	"
"	Songyori	Transformer	66/11 12,500 "	1	Radiator destroyed & oil washed away.
"	Inhungni	"	66/33 10,000 "	1	Oil tank exploded
Pyongan-namdo	Songchon	"	66/22/3.3 350 "	2	Exploded and burnt XXXX XXXXXXXXXXXXXXXXXXXX
"	Sunchon	"	66/22 750 "	2	Bush totally damaged; & tank & radiator partly damaged.
"	Sukchon	"	66/22 1,500 "	4	Exploded and burnt
Pyongan-bukto	Sakchu	"	66/22 750 "	4	All destroyed & burnt (irreparable)
"	Maengjungni	"	66/22/3.3 1,000 "	4	"
Hwanghae-Chaeryongdo	"	"	66/22 1,000 "	2	" Outdoor switchboard partly destroyed
"	"	"	66/22 750 "	2	"
"	Sariwon	"	66/22 1,500 "	2	One, burnt up; One partly damaged and oil washed away.
"	"	"	66/3.3 750 "	1	Exploded and burnt.
Hwanghae-do	Haeju	Transformer	66/22/3.3 1,200KVA	4	Two, completely damaged; two slightly damaged (reparable)
"	Namchon	"	66/22/3.3 750 "	4	Exploded and burnt
"	Kyeyong	"	66/22 1,500 "	4	"

Power Distributing Lines (as of June 1949)

	Length of Electric Wire			Length of Telephone Wire			Number of Supports			Number of Transformers	
Section	High	Low	(Km)	High	Low	(Km)	Iron	Wooden	Total	Number	KVA
	Voltage	Voltage	Total	Voltage	Voltage	Total					
Höchöngang	62,258	3,946	66,204	169,817	8,172	177,989		1210	1210		
Changjingang	26,593	4,713	3,606	77,031	7,865	84,996		567	567	150	2362
Puchöngang	16,526	2,921	19,447					302	302	81	1771
West Transmission											
Pyöngyang	4,030	3,570	7,600	12,090	7,140	19,230		143	143	16	265
Power Distributing											
Center	590,100	324,300	915,400	162,340	9,761	2519500	2	13,885	13,887	4401	41938
Pyongan-namdo											
Power Distributing											
Center	418,791	530,129	1448920	3024953	1007509	4033412	6	26,384	26,390	2814	18582
Haeju Power											
Distributing											
Center	696800	525100	1221960	1911200	1152900	3064100	2	22001	22003	4191	27773
Sinöiju Power											
Distributing											
Center	545267	377802	923069	1578042	839390	2412432	17	16745	16762	24592	24035
Hamhüing Power											
Distributing											
Center	554710	455700	1010400	6634400	955700	2623100	4	12499	14003	2045	21366
Wönsan Power											
Distributing											
Center	967211	852466	1819677	2156139	1904972	4561100		32143	32143	3799	39705
Chöngjin Power											
Distributing											
Center	1108500	771210	1879710	2993700	1648300	4642000		26954	26954	2983	32884
Nampo Power											
Distributing											
Center	380600	228300	678900	701200	456600	1157800		10505	10505	1582	13290
Kanggye Power											
Distributing											
Center	325671	188116	513787	742957	362921	1145878		8196	8196	962	9179
Tanchöa Power											
Distributing											
Center	891684	741134	1632858	2241221	1455716	3696937		29879	29879	2264	20988
Total	7060035	5009447	12069478	19401244	10816285	30217527	31	203113	203113	27746	255218

Damages to Electrical Equipment at Pyŏngyang

<u>Kind</u>	<u>Length Location (M)</u>	<u>Extension Length (M)</u>	<u>Number of Supports</u>	<u>Transformer on poles</u>	<u>U.S. on poles</u>	<u>Re- mark</u>
Equipment as of 25 June 1950	209,738	1,151,041	5,473	2,733	326	
Damages as of 20 October 1950	14,856	116,250	193	350	60	
Equipment as of 18 November 1950	194,882	1,034,791	5,280	2,383	266	

Survey in November 1950
by the Pyŏngyang City Power Distributing Center.

6 -

No. 1 Damage to Transformer Substations

<u>Name of Substation</u>	<u>Location</u>	<u>Capacity KVA</u>	<u>Tools and Machines</u>	<u>Standard Size</u>	<u>Quantity</u>	<u>Outline of Damage</u>	<u>Extent of Loss</u>	<u>Repair</u>
Pyongyang	Munsuri	93,750	Transformer	154/66/11KV 15,000KVA Water cooling	1	Completely ruined by direct bombing	Big damage	Impossible
"	"	"	"	" Self Cooling	2	Burnt	Half-damage	Possible
"	"	"	"	" water "	2	Oil leaked	small-damage	"
"	"	"	"	" self "	1	"	"	"
"	"	"	"	66/33KV 750KVA water cooling	2	Scorched in bombing	Half-damage	"
"	"	"	"	11/33KV 500 " Self cooling	1	Bush damaged	Small-damage	"
"	"	"	O.C.B.	154 KV 66KVA	2	Bullet Hits on Bush and Oiltank	"	"
"	"	"	"	P. coil	1	Burnt	"	"
"	"	"	P. coil	66KV 4800KVA	1	"	"	"
"	"	"	D.S.	66KV	5	Bombing	Big damage	Impossible
"	"	"	P.T.	"	2	"	Half-damage	Possible
"	"	"	R.T.	"	2	"	Big-damage	Impossible
"	"	"	C.T.	"	12	"	"	"
"	"	"	O.C.B.	"	5	Bush Damaged	Half-damage	Possible
"	"	"	Lightening Arrester	"	1	"	Big-damage	Impossible

<u>Name of Substation</u>	<u>Location</u>	<u>Capacity</u>	<u>Tools and Machines</u>	<u>Standard Size</u>	<u>Quantity</u>	<u>Outline of Damage</u>	<u>Extent of Loss</u>	<u>Repair</u>
Pyongyang	Munsuri		P. Coil	154KV 17000KVA	1	Bush damaged	small-damaged	Possible
"	"		Iron Frame	54KV 66KV	10	Bombing	Big-damaged	Impossible
"	"		Oil Phase Machine	16000KVA	1	Motor and Dynamo damaged	Small-damaged	Possible
"	"		Switchboard	No.1TY	2	Bombing	"	Impossible
East Pyongyang	Songyori	KVA 17,000	Three Phase Transformer	66/11KV 2500 KVA	1	Radiator Pierced by bullet Hits	"	Possible
"	"		O.C.B	66KV	1	Bush-Insulator damaged	"	"
"	"		"	3.3KV	4	Bush damaged by Bombing	"	"
"	"		Single Phase Transformer	66/3.3KV 15,000KVA	1	Radiator damaged and oil leaked	"	"
"	"		"	"	1	Oil leaked	"	"

No. 2

War Damage to Transformer Substations

Name Substation	Location	Capacity	Tools and Machines	Standard size	Quantity	Outline of Damage	Extent of Loss	Repair
Nangnang	Nangnangni, Pyongyang	KVA 8700	Single Phase Transformer	66/22 KV 2500 KVA	1	Bush Damaged	Small-damaged	Possible
"	"		P.T.	22KV	2	Oil leaked due to bombing	Half-damaged	"
"	"		C.T.	66KV	1	Bush (1m ²) damaged	"	"
"	"		D.S.	22KV	2	Ruined due to bombing	Big-damaged	Impossible
Changgūnni	Pyongyang	1,200	No damage					
Pyongchŏlli	Pyongyang	6,000	Single Phase Transformer	22/33KV 2,000KVA	2	Radiator bombed and Oil leaked	Small-damaged	Possible
"	"		Lightening Arrester	33KV	1	Ruined	Big-damage	Impossible
Yusŏngni	Pyongyang	4,500	Relay	3.3KV	14	"	"	"
Inhŏngni	Pyongyang	16,000	Three Phase Transformer	66/3.3 KV 10,000KVA	1	Oil leaked	Small-damaged	Possible
Sadong	Pyongyang	2,100	No damage					
Imwŏn	Misalli, Pyongyang	1,200	No damage					
Chochŏn	Chŏdamni, Yongsanmyŏn, Taedonggun	22/110KV	P.T.		2	Completely burnt		
	Pyŏnggŏ-namdo	Three Phase 66/110 KV	P.T.		1	Machinegunned		
		66KV 400A	L.S		6	Completely burnt		
		22KV 400A	L.S.		18	"		
		3.3KV 400A	"		3	"		
		130 Tons						
		20	Crane		1	Damaged by 30 percent		
		5A	Ampere- meter		2	Completely burnt		
		5A	"		1	"		
		3/1.0	Voltmeter		1	"		
		500D	"		2	"		
		2001L2	Resistor		1	"		
Chochŏn	Chŏdamni, Yongsanmyŏn, Taedonggun, Pyŏnggŏ- namdo	30 Circuit Lines	Flashpoint Tester		1	Completely burnt		
			Switchboard		1	"		
			Telephone set		7	"		
		4M	DS Insulating Pole		4	"		
		4M	ICB Rod Pole		2	"		
		30 60T	Signal motor		1	"		
		250V/50A	Electromag- netic Switch		2	"		
			Electric welder		1	"		
			Drier		1	"		

War Damage (As of October 1950 at Time of Recapture)

Name of Substation	Location	Equipment & Output	Tools & Machines	Outline of Damage	Remarks	Oil
	Chbdamdong, Yongsanmyon, Taedonggun	100,000x2 KVA 220KV/66KV	Tr	Bullet penetrated center of No. 1 Tr. Case; Bullets penetrated top of No. 2 Tr. Case; one Bush damaged	No. 1 impossible to Use; No. 2 useable after Repair	Oil Remained 60 percent at each Tr. (Volume of OT 77800L)
"	"	1300x4 KVA (66/22KV)	Tr	Completely burnt in bombing	Bombing	None
"	"	300x1 KV (66/3.3)	Tr.	Case punctured in Machinegun fire, but repaired	Usable after Supplying oil, and drying case.	None
"	"	300x3 122/3,3KV)	Tr.	Completely burnt in bombing	Unusable	None
"	"	66KV 1200 2 600A	O.C.B	"	"	"
"	"	22KV 400A2	"	O.C.B. Bush all damaged	Usable after replacing Bush	Some
"	"	220KV 800A 1 phase	E.C.B.	One phase of E.C.B. Bush Damaged	Ditto	None
"	"	66KV 600A	E.C.B.	(200/5A) at Room, one phase damaged	Usable after replacing T Room	"
"	"	Switchboard 8 Cable board 1 Inside board 1 Stationboard 6	Switch board	Completely burnt	Unusable	
"	"	10000KVA 2	Voltage Regulator	One set burnt; one set pierced in radiator	Usable	50 percent Oil remained in each set.
"	"	Arc Suppressing (20000KVA)	Reactor	Completely burnt	Unusable	None
"	"	66KV	L.C.B.	Insulator damaged	Usable after replacing insulator	
"	"	40M ³ 2	Oil tank	Burnt in machinegun fire		500 l. remained
"	"	66KV 50/5x2 5/5x1 22KV 40/5x2 50/5x2	6.7.	Completely burnt		None
"	"	Cable (62) Cotton Cable High Voltage Cable High frequency " D.S. Insulator (220KV) D.S. Insulator (66KV)	30000m 3000m 1000m 400m 20 10	Completely burnt " " " Damaged in Bombing " "	Unusable	
Chinnampb	Oheri, Chinnampb	1,000,000KVA	Transformer	Unusable		
"	"	10000KVA	Voltage Regulator	"		
"	"	400A	O.C.B 2	"		
"	"		Switchboard 12	"		
"	"		High Voltage Switchboard	"		
"	"	Special Core	Insulator Oil	1800001/ L.		
"	"	T.10m/m 6 core	Lead covered Cable	5000 M.		
"	"	7/0.8M/M 4 core	"	5000 m.		
"	"		Radiator	4		
"	"	15 percent	Electric Fan	4		
"	"	25 "	Circulating Electric motor	2		
"	"	Wall hanging	Telephone set 5	One high-powers set		
"	"	High power	"	2		
"	"	220T 100A	Three-Pole Switch	20		
"	"	100A	"	30		
"	"	112A	Storage Battery	2 sets		
"	"	Office Use	Swivel Chair	2		
"	"	"	Desk	2		
"	"	"	Electric Clock	2		
"	"	30 Circuit Lines	Converter	1		
Wönümni	Wönümni, Kuisöngmyön, Yongganggun	6000KVA & 450 KVA	Bushes 24	No damage		None
Kiyang	Kiyangni, Chemical Tongjinmyön Factory Kangsögun Substation	1000 KVA (66.7)	Transformer	Completely damaged	Bombing	None
"	"	66KV E.C.B. 2	E.C.B.	"	"	"
"	"	1/KV O.C.B.	O.C.B.	Two bushes damaged	No damage on tank	Some

War Damage November 1950 Kangsön Steel Mill Substation

POOR ORIGINAL

No War Damage

October 1950

Nampb Chemical Factory
Substation

War Damage

<u>Name of Substation</u>	<u>Location</u>	<u>Equipment & Output</u>	<u>Tools & Machines</u>	<u>Outline of Damage</u>	<u>Remarks</u>	<u>Oil</u>
Nampb Chemical Factory Substation	Hadaeduri, Chinnampb	1500KVA	Transformer 3	On one transformer, bush all damaged	Usable by replacing bush	None
"	"		OT.	Push damaged		some
"	"		D.C. Insulator	Insulator damaged		
"	"		AW3	All damaged	Unusable	

War Damage

October 1950

Nampb Zinc Substation

<u>Name of Substation</u>	<u>Location</u>	<u>Equipment & Output</u>	<u>Tools & Machines</u>	<u>Outline of Damage</u>	<u>Remarks</u>	<u>Oil</u>
Nampb Zinc Substation	Hadaeduri, Chinnampb	KVA				
"	"	3500x2	Transformer	Radiator, Push damaged	Usable if repaired	None 12 \$
"	"	12500x1	"	Core damaged	Usable if oil is replaced	None 20 \$
"	"	9850x1	"			"
"	"	9850x1	"	Burnt out		
"	"	3000x1	Rott	Commutator damaged	Unusable	
"	"	Nine phase		Completely damaged	"	
"	"	Switchboard				
"	"	3000x1	Mercury vapor rectifier	"	"	

War Damage

November 1950
Chinnampb Glass Factory
Transformer Substation

Name of Substation	Location	Equipment & Output KVA	Tools & Machines	Outline of Damage	Remarks	Oil
Chinnampb Glass Factory Substation	Masalli,	12,500x1	Tr.	1st & 2nd Bushes damaged, & one radiator machine gunned.	Usable	None (12150 L)
	Chinnampb	66KV 200A 3,000x1	O.C.B	Bush damaged	"	Some
			Tr.	No damage from bombing, but the Communists drained oil.	Usable if supplying oil	None (3450 L)
		200KVA 66/110Vx2	P.T.	Bush damaged by Communists	Usable	Some
		KVA 4,000x1	Tr.	"	"	"

All damages were done by the Communists before they fled.

War Damage

October 1950

Name of Substation	Location	Equipment & Output KVA	Tools & Machines	Outline of Damage	Remarks	Oil
Nampb Soda Factory Substation	Tohangni, Chinnampb	22650	Tr.	1st, 2nd, 3rd Bushes damaged	2	None
		3000KVA	"	Two were fired at by the Communists.	2	"
		4500KVA	"	1st, 2nd Bushes damaged	3	"
		2510KVA	"	All bushes damaged	1	"
		4800KVA	Mercury-Uapor re-ctifier 6	Telegraph-Poles, vacuum-meter damaged	vacuum-meter damaged	One is reparable

(a)

Power Distributing Office

Chinnamp'o

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(2) Real Condition of Operation.

A. Prior to 25 June 1950, the Nampo Office of the Pyongan-namdo Power Distributing Department was an affiliated organ of the Bureau of Electricity, Ministry of Industry, Democratic People's Republic of Korea, and its primary function was to distribute power to the Nampo city, Yonggang-gun, Kangsŏ-gun, and to one part of Taedong-gun. But, in effect, it also repaired transmission lines, collected power-rates, and disbursed funds that were necessary for power distribution. Transformer substations, however, were beyond its province, because they were operated by the power Transmitting Department, Bureau of Power Control.

B. Real Conditions as of October 1950. With the outbreak of the June 25 War, the Communists concentrated all efforts in the supply of power for army use. But soon the UN Air Force bombed out the Red military facilities, including munitions factories, located in areas under the jurisdiction of the Nampo Power Distributing Office,

When the Communists suffered heavy casualties in their losing battles, they called out the young employees at this office to the battle field, and almost stopped power distributing activities here due to lack of labor, and at the last stage of their tragic defect, they destroyed and burnt principal transformers and switchboards at the Yusari Substation, in Chinnampo, which used to receive current of 220KV from the SUPung Power Plant before they took to flight. At present, no electric power is supplied in areas under the jurisdiction of this office.

(c) Operation Plan for the future.

After the liberation of North Korea by the UN Armed Forces, the inhabitants of the liberated areas regained freedom in every life, and now non-Communist workers are engaged in the restoration activities at this plant, which has been brought under the administration of the Construction Section, Chinnampb Municipality. After an election in North Korea, and with the establishment of an unified Government, the electrical industry will be operated under the direction of the Government.

(4) General Inventory of Stores (As of 31 October 1950)

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u>			<u>Where fore of Differ- ence in Qu antity</u>
			<u>10 Oct.</u>	<u>19 Oct.</u>	<u>31 Oct.</u>	
(Electric Bulbs)						
Electric Bulb	100V/20W		22		0	Supplied to UN Army
Miniature Light Bulb	4.5V				13	
Pilot Bulb	0.11V				25	
Electric Bulb	220V/60W				2	
"	220V/40W				1	
(Electric Wires)						
2nd Class Wire	50 m/m	Kg			57	
"	40 m/m	"			83	
"	32 m/m	"			40	
"	26 m/m	"			8	
"	7/20 m/m	"			20	
3rd Class Wire	7/16 m/m	"			23	
"	18/20 m/m	"			500	
"	61/2.9 m/m	M			35	
4th Class Wire	1.2 m/m	M			6	
"	1.6 m/m	M			5	
"	127/30 m/m	M			20	
Uncoated Copper Wire	5.0 m/m	Kg			50	
"	4.0 m/m	"			10	
"	3.2 m/m	"			30	
"	2.9 m/m	"			28	
Twisted Copper Wire	7/20 m/m	"			190	
"	19/1.8 m/m	"			37	
Wire Cord		M	110		6	Supplidd to UN Army
Alumiumn Wire (3.2m/m)		Kg			2	
2nd Class Penmatic?						
Wire	40 m/m	"			14	
Telephone Cable		"			300	
2nd Class Pnenmatic?						
Wire	3.2 m/m	"			2	
Uncoated Hard Copper						
Wire	7/2.6 m/m	"			0	
Scrap Wire	"	"			660	

Articles	Standard Specification	Unit	Quantity			Where fore of Difference in Quantity
			10 Oct.	19 Oct.	31 Oct.	
Cable	7/0.8	M			720	
"	3 Core 225	"			18	
(Insulators)						
High-Voltage						
Petticoat Insulator 6,000V					310	
Low-Voltage "					547	
Outdoor Busba "					26	
High-Voltage Large						
Petticoat					78	
High-Voltage						
Three-Pold "					36	
High-Voltage						
Petticoat "					345	
High-Voltage						
Standoff "					204	
Low-Voltage						
Sarge Double "					106	
Low-Voltage						
Medium Double "					223	
Low-Voltage						
Small Double "					19	
Low-Voltage Large						
Petticoat Z					93	
Low-Voltage Medium						
Petticoat "					5308	
Low-Voltage Small						
Petticoat "					380	
Sabot Knob "					126	
Low-Voltage						
Split-knob "					15	
Low-Voltage Fixed						
Insulator					23	
296 Knob					5,000	
Z Knob					42	
S Knob					178	
Miniature Knob					440	
Insulator-type						
Switch					45	
Flanged Ins-					2523	
ulator					427	
"					60	
"					622	
"					528	
"					40	
"					545	
"					0	
"					0	
Flangeless In-						
sulator Tube					8,000	
High-Voltage						
Insulator tube					15	

Articles	Standard Specifying Unit	Quantity			Where fore of Difference in
		10 Oct.	19 Oct.	31 Oct.	
Double Wire Cleat					3323
High Voltage Insulator					4
Flangeless Insulator Tube					3
"					1
"					9
Special High Pet-ticoat Insulator					5
"					2
"					27
(Watt-Hour Meter)					12
Watt-Hour Meter	100V/3A				797
"	5A				1,500
"	10A				1
"	100V/15A				76
"	20A				5
"	25A				20
"	30A				7
"	50A				2
"	75A				1
"	100				1
Three Phase meter	220V/3A				89
"	10A				110
"	20A				19
"	30A				18
"	50A				9
"	100A				1
" (out of order)	20A				
High Voltage Meter (outdoor)	3300				1
"	20/5A				1
"	30/5A				1
"	3300 400/5A				1
"	3300 10/5A				1
" (indoor)	3300 75/5A				1
" (outdoor)	3300 100/5A				2
" (indoor)	3300 30/5A				
G					2
" PT (indoor)	3300/110V 50/5A				
(Tools & Machinery)					
Closed Oil circuit					9
Switch	100V/100A				4
" (out of order)	"				11
"	100V/30A				1
"	"				
Closed Oil circuit					7
Switch (Bipolar)	3500V/50A				11
"	3500/100A				9
Disconnecting Switch	200A				198
"	100A				6
Voltmeter	1500V/100A				
Alternative Current					10
Volta meter	250/75				11
"	1000/30				

Articles	Standard Specification	Unit	10 Oct.	19 Oct.	31 Oct.	Where fore of Difference in Quantity
Alternative current Voltage meter	250/50		1			X
Voltmeter	1000v/150A		2			X
Alternative current Voltmeter	1000V/50A		1			X
'Senda' Stove			3			X
'Fukuroku' Stove			10			XM
Electrostatic Condenser	220V/75mm-		1			X
"	220V/100MF		2			X
Voltmeter (out of order)	10A		2			X
Outdoor Oiler PT			2			X
Outdoor Oiler CT			3			X
Choking Coil	200A					X
Current Limiting Resistor			6			K
PT Porcelain Stand			2			
Meter deflector	110V/30/5A		1			
"	110V 20/5A		2			
"	110V 16/5A		1			
"	110V 400/5A		1			
Transformer Bushing	22KV		2			
Overload Relay			2			
Double, Wire (able head)			1			
Ground Detector	22K					
Electro-Magnetic Switch	MA Type		1			
Electro-Magnetic Crane	440/15 h.p		1			
Closed antenna Switch (out of order)	3500200A		3			
"	50A		1			
(Tools)			18			
Driver	3 inches		4			
"	6 "		8			
Branch Cutting Seissors			23			
Pickaxe			27			
Mattock			12			
Hoe			338			
File	25 inches		18			
File (Miniature type)	4 "		18			
"	5 "		0			
"	6 "		2			
"	8 "		0			
File	Flat 12 inches		45			
File	Crude 12 "		5			
"	Angle 12 "		4			
"	Flat 14 "		0			
'Handa' Trowel	medium 14 "		1			
"	100 inomlue		1			
"	200 "		3			
Bite	12-16		2			
Saw (Single blade)	large		2			
"	small		2			
Auger	4 'bu'		1			
"	2 'bu'		1			
"	5 'bu'		8			
Electrician's Knife			3			
Sleeve screw			1			
Pinchers						

Articles	Standard Specification	Unit	Quantity	31 October
'Best' (?)	small			0
Wheelbarrow				2
Chisel				8
Drilling auger	5 'bu'			2
"	4 "			1
Monkey Spanner	8 inches			2
"	6 "			2
(Transformers)				
Transformer	1 KVA (burnt)			7
Transformer	2 " "			9
"	1.5 " "			1
"	3 " "			7
"	4 good			4
"	5 burnt			8
"	7.5 "			3
"	1.5 "			5
"	20 "			3
"	30 good			1
"	50 burnt			8
" three phase	2 "			1
" "	7.5 "			1
"	3KVA burnt			1
"	5 " good			1
Busuda (?)	10A burnt			1
(Fiber Products)				
Hemp Rope	4 'bu'	Kg		11
Flax Rope	5 "	"		120
Manila Rope	7 "	M		0
"	6 "	M		10
(Miscellaneous)				
Paper				350
Straw Rope		Role		36
Bicycle	out of order			4
Dry Battery	"			80
Door wheel	"			18
"				4
Tinplate Fuse (arrier)				34
Fuse-Carrying Container				115
Cement		bag		450
Old Cloth		'kwan'		4
Ceiling Cord tape				2
Stove Hook				10
Iron Ring				18
Tea Pot				2
Hinge				40
Watering Pot				2
Coal		bag		50
Fibrous Filler for Plaster		'kwan'		10
(Lumber)				
Telegraph Pole				7
Low-Voltage Beam	4 ft.			35
"	5 "			240
"	6 "			65
"	8 "			300
Sawn Lumber		'sai'		1,000
Mine Post				20
(Non-ferrous)				
Sealing Lead				5370
Poles		Kg		2

Articles	Standard Specification	Unit	Quantity 31 October
(Oils and Fats)			1,728
Transformer Oil		L	1,728
" (adulterate)		L	405
Mobile Oil	18 L	can	9
Grease	"	"	2
'Best' (?)		L	18
Insulator Oil		L	18
(Paints)		g	0.4
Coaltar		Kg	3,000
Creosote		Kg	242
Sulphuric Acid			
(Rubber Products)			2
Automobile Tire			37
Rubbish Sack		20	
(Wire Products)			
Nail	1.5 inches	Kg	15
"	4.5 "	"	75
Wire	No.6	"	110
"	No.12	"	53
Sealing Copper Wire		Roll	2
Wire	No.14	Kg	7
(Old Gold Production)			
Arrester	66KV		2
LS (2 insulators missing)	25KV/400A	set	3
C/T.	22KV		1
OCB	33KV/100		1
Oil Circuit breaker			1
Marble Switch board			1
(bottom)			1
O.C.B. Hanger	33KV		3
LS	22KV/400A	set	8
Manometer			
O.C.B. Hanger	33K		1
"			1
Conductor Finger	22KV		1
O.C.B. Hanger			1
Oil circuit Breaker		set	1
"	66KV	"	1
CT Tank	(no insulator)		2
CT Transformer Bushing			2
CT Bushing			2
CT Tank		set	2
Recorder	33KV		1
Transformer Bushing	22KV		1
Miniature Bushing	22KV		2
CT Tank	66KV (for insulator)		2
CT Bushing	22KV		2
"	22KV		2
CT	5/5A		2
Zero Phase CT	3300/400A		3
D.S.	33K/400A		1
Manometer	22KV		3
Choking Coil	22KV		3
OCB Operating Pole	66KV		1
CT Tank	66KV (insulator type)		2
O.C.B. Conductor Pole			1
Marble Switchboard	Upper & Lower		2
"	"		2
O.C.B. Operating Pole	22KV		1
O.C.B. Elevator Metal fitting		set	1
PTCF Fixture			18
Lighting Conductor Hose	22KV		4

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantities</u> <u>31 October</u>
OCB Hanger	33KV		1
Drum Coil			40
CT Bushing	22KV		2
PT	33 110/50		6
Oil Circuit Breaker			
Hanger	69KV/400A		1
P.S.	11KV/200A		2
Choking Coil	22KV		3
" (no insulator)	66KV		5
Choking Coil Insulator			2
Transformer Bushing	22KV		2
LS	22KV/200A	set	1
OCB Three-Pipe Stand	33KV		1
Choking Coil	22K	set	1
O.C.B. Operating Pole	22KV		3
Choking Coil Insulator	400A		8
LS Insulator	22KV		3
O.C.B. Three Phase	33KV/100A		1
Choking Coil (no insu.)	200A		3
Conductor Finger			5
Transformer Bushing	small type 33KV		4
Cork	large		3
"	small		5
Locknut	1 1/2 inches		2
"	1 inch		2
"	3/4 inches		15
Choking Coil			
(With Insulator)	400A		3
"	66KV		3
Hook Pole	2 m		2
"	1.7 m		2
Base Bolt	6 inches		20
"	10 inches		2
V Bolt	3/10 inches		11
V Clevis			6
LS Revolving Metal			
Fitting	large		9
"	small		18
Pipe Contactor			1
Cup Ring	2/8x2 "		2
Switchboard			1
Hinge Base			12
Socket Re-fuser	1 1/4x 1 1/2		24
Bolt	3/4x10 inches		4
"	5/8x10 "		4
"	5/8x6 "		9
"	1/2x4 "		23
Lock Nut	1 1/2 "		2
"	1 inches		9
"	1 1/4 "		9
Strain Bushing			130
'Flower' Turbine			505
Switchboard metal Pipe			124
Coil			2
PT	3300/110		3
CT	5/50		3
Switchboard Control			
Metal Fitting			225
Bolt	5/8x1.5 inches		825
"	1/2x1.5 "		326
"	1/2x5.5 "		320
High Voltage In-			
sulating Porcelain			
Bushings			163
Hinge Base	22KV		4
Lock Nut			4
Disconnecter Stand			1

<u>Article</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u> <u>31 October</u>
Hinge Base	22KV		4
Lock Nut			4
Disconnecter Stand			1
OCB Stand			10
OCB Handle Switch			5
Normal Bender	1/8x1 1/2		5
Telephone Insulator			932
LS Control Metal Fitting			18
Nut	6 'bu'		718
Scrap Cable	2x50	m	3
"	4x5.5	m	36
"	2x7/10	m	35
"	4x5.5	m	30
"	3x5.5	m	70
"	2x5.5	m	64
"	3x14	m	52
"	4x5.5	m	80
"	4x7/0.6	m	30
Strain Insulator			541
Mouthpiece (?)			1
Reactor			6
Oil Distributing Cork 1 1/2			7
Pulmotor Bushing			3
Oil Gauge			2
Oil Distributing Cork			9
Trunk Line Insulator			7
PT Fuse Stand			18
Current Limiting			1
Resistor (with insulator)			1
Instrument transformer			2
Potential transformer			
Disconnecter control			2
metal Fitting			1
OCB Controller			3
Switches in Sections 66/200A			1
Switches in Sections 100A			1
Finger arrester			1
" Magnetic Stand			2
Voltmeter	50A		2
"	5A		1
"	80A		1
"	75A		1
Ground Relay			2
OCB Bushing	33KV		1
Cutting Bushing			2
Fuse Magnetic Stand			
OCB Insulating Porcelain			2
Bushing	Pinned		6
Conductor Fuse	5A		8
"	20A		2
Gauge Deflector	5/5A		2
Coil			1
Power Factor			
Switchboard Pilot			1
cutting Machine		set	4
Deflector	20/5 210/5		3
Manometer			7
OCB Operator	27KV		1
DS Fuse	66KV		2
Arc Control Machine			1
Conductor Finger			2
Drum Coil			

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u> <u>31 October</u>
OCB Operating Handle		set	1
OCB Operating Pole			1
Arc Control Machine			2
Sand drum Coil			1
DS Fuse			4
"			5
Power-Factor Meter	110/5A	110/5A	3
"	1000V		1
KW Meter	32/110		3
XXXXXX "	1000V		1
Ground Relay			1
Resistor			4
Gas Bender			1
PP Tube-type Fuse			5
Oil Cork			3
Oil Gauge			2
Coil			1
Voltameter	50A		3
"	80A		1
Carbon Resistor			3
Manometer			6
Ground Relay			1
Overload Relay	out of order		2
Ground Relay	"		1
OCB Insulating			
Porcelain Bushing			1
Choking Coil	"		1
OCB Oil Cork Pipe			3
OCB Signal Light Bulb			1
OCB Oil Gauge			3
Sand drum Coil			7
Conductor Finger			14
Remote Control Dis-			
connector	400A		5
Hinge Base			4
Lock Nut			4
Ground Relay			2
Current Limiting Resistor			1
V Shape meter			1
Power-Factor Meter			1
Signal Socket	out of order		2
Switchboard Knob			1
Signal Lens	blue, red		2
DS	400A		3
OCB crane			1
PT Magnetic Stand			6
Coil			3
OCB Insulating			
Porcelain with core			8
Bushing	33K		X
Switchboard Signal			
Light Bulb	blue		2
"	red		12
Socket			5
Magnetic Stand	small type		7
Engrossed Fuse	20w		29
"	30A		17
"	75A		18
"	5A		30
Oil Gauge			1
Switch Handle			2
Clamp for Iron tower			49
Pipe Connecting			
Metal Fitting			30

Articles	Standard Specification	Unit	Quantity 31 October
OCB Cut-in Indicator	66KV		1
OCB Operating Pole			2
OCB Pipe			1
Suspension Lamp			23
OCB Operating Pole	66KV		1
LS Insulator			1
OCB Hanger			1
DS Knife			3
DS	200A		2
Receiving Switchboard			1
OCB Hanger			5
PS Fuse	200KV (No Fuse)		3
"	22KV (out of order)		392
Carbon			
Switchboard Assembling			29
Pipe			28
Switchboard Pipe			30
"			12
"			46
"			27
Switchboard Pipe			16
"			18
"			17
"			19
"			53
LS (out of order)	66KV/400A		1
DS	66KV		2
Deflecting Coil	(with insulator)		3
CT	22KV		1
LS Insulator	1	set	2
Balancing Deflector	Three Phase		2
OCB Rolling Metal			2
Fitting	32K		24
PT Magnetic Stand	for double line		4
"	" single line		40
PT Fuse	1A		8
"	0.5A		29
"	75		26
PT Fuse			
Switchboard Indicating			6
Lamp	red		40
"	blue		7
Oil Gauge			2
OCB Bushing	33KV		
LS	22KV/200A	set 1 insulator missing	3
LS	22K/200A	"	3
OCB Hanger	33K		1
DS Pole	1300 m/m		6
DS Control Pole			6
OCB Bushing	33K		11
Balancing Deflector			5
D.I. 'Sedo'	33KV/100A		8
OCB Switchboard	33KV/100A		1
Oiling circuit breaker			4
Parts with Handle			1
LS	22KV/400A	set	
Lightning Arrester			2
board	22KV		3
LS	25/400A	"	1
CT	22KV 10/5		1
CT			24
Earth Pipe Pole			7
OCB Handle Pole			2
CT Bushing	22K		

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u> <u>31 Oct.</u>
Arc-Suppressing Reactor			1
Switchboard			1
Receiving Switchboard			7
Switchboard Pipe	2ft.		1
Inside Receiving Switchboard			1
Inside Distributing Switchboard			1
LS Pipe			4
LS Controlling Handle			2
Switchboard Pipe	1 1/2 inches 16ft.		1
"	1 inch 6ft.		1
"	1 1/4 inch 9ft.		1
"	1 1/2 12 ft.		1
"	1/2 inch 12ft.		1
CT	22K 18/5A		1
LS	22KV/400A		3
OS Axle			28
OCB Bushing	33KV		4
OS insulating Porcelain Bushing	m		30
Switchboard Handle	60.2		1
OCB	69KV/400A	out of order	1
CT Bushing	22KV		2
CT	22KV		2
Manometer			3
Choking Coil	3 lime (with insulator)		1
OCB Signal Lamp			1
Transformer Bushing	22K		2
Conductor Axle	large		6
OCB Insulator Axle	small		8
Handle			1
Copper Sleeve	1/29 m/m		1466
DS. Insulator			6
Copper Wire	4/1 m/m		100
Copper Sleeve	12/35		10
"	7/2.3		97
Copper Sleeve	7/2.6		1139
Iron	4.5		3550
Copper Sleeve	7/2 6-7/3.5		20
"	7/29-7/3.5		19
Iron Sleeve			2350
Oil Tank			2
High Voltage Ball Insulator			16
Trunk Line Insulator			14
Pole Spike	1/2x16		2170
Bolt			500
Arm Pin Axle			838
Arm Stand	26 inches		58
Pipe	3 1/2x420 m/m		6
"	2x3		1
"	1 1/4x9 large		2
"	1 x6ft.		1
"	2x5ft.		3
"	1/2x12ft.		9
"	1/2x5		2
"	1x13		1
"	1x12		1
"	1x9		1
"	1/2x7		8
"	1 1/2x3		3
Wire Clevis			68
U-Clevis			11

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity 31 Oct.</u>
Washer	5/8		12
Lock Nut	2 inches		36
"	4 inches		26
String Lamp			21
U-Clevis			310
Ring			558
V-Bolt	5 'bu'		292
Marble Switchboard		plate	2
Bus Bar Clamp			123
String Lamp			18
Flot Plate Metal Fitting			20
Top Axle			23
Bis (?)	22K		226
"	66K		10
Cross Metal Fitting			32
Special Clamp			194
Bushing (out of order)	22K		1
String Lamp			240
Washer			64.748
U-Bolt	3 inches		540
Hook			129
Bolt	5/8x10		110
" (With nut)	5/8x23		43
"	3/0x30		21
"	3/0x2		244
Normal Bender			90
Suspending Lamp			1905
PS Metal Fitting (no insulator)			2
"			1
VS Metal Fitting (No insulator)			2
VS Control Iron Stand			1
VS Metal Fitting (no insulator)	66KV/400A		1
String Lamp			1277
Double Clamp			23
8 Shape Ring			100
Wire Clamp			184
"Yogu" (?)			29
Suspension Clamp			226
Cross Metal Fitting			27
Hook			2090
U-Clevis			2848
Topping Axle			1017
Bas8			1380
'Bogu' (?)			60
String Lamp	14 inches		24
V Bolt, large			24
String Lamp	20 "		18
(?) Lamp			55
Bolt, small			50
(?) Turbine			50
Cable	2 core 353	m	540
"	3 core 555	m	70
Scrap Cable	2 core 7/0.8	m	75
"	3 core 7/0.8	m	19
"	2 core 7/1.0	m	12.5
"	3 core	m	3
"	2 core 3.58	m	7
"	2 core 3.58	m	10
Twisted Iron Wire	7/2.0	Kg	16
Scrap Uncoated Copper Wire	12 m/m	Kg	128
Transformer Hanger			16
Scrap twisted Copper Wire	7/2.6	Kg	131
Uncoated Copper Wire	9 m/m	Kg	186
Transformer Bushing	66KV		2

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u> <u>31 Oct.</u>
Arc Suppressing Reactor	66kv		1
Transformer Bushing	"		2
Reactor O.C/B. Controller			1
PT Bushing	66KV		4
PT	66KV		1
"			1
Transformer	300K		1
OCB	22KV		1
Transformer Bushing	66KV		2
Reactor OCB	5KA		1
VS (4 insulators our of order)	66KV		2
Transformer Bushing			1
Dry Pulp			1
'Busuba' Insulator			580
"	out of order		521
DS Insulator			257
'Biri Insulator			200
"	"		42
Double Insulator	good		604
"	out of order		254
Angle	65x65x2m		400
"	90x90x5.40		90
Pipe	1/8x3.5inch.x20inch		31
Box Angle		¢	5
Switch handles			2
O.C.B.	66K	set	1
Empty Can			100
Transformer			1
Scrap Wire		k	660
Telephone Protecçor			2
Transformer Bushing			2
(Wiring Tools)			
Sealing			15
Magnetic Stand			6
'High-Pole' Stand			1,300
'Low-Pole' Stand			17
Switch-pole Stand			664
White Bulb			622
No.1 Holder			3,935
One Holder			87
'Hōkoku' Holder			764
Concent (?)	20A		249
Ceiling Lamp			152
Safety Switch	10A 125		145
	20A 20		
Fuse Box			74
Bipolar Switch (Edged)	100A		32
"	50A		22
Tripolar Switch (Edged)	300A -100A		2
Bipolar 'Kansaki' Switch	30A		1
Indoor Switch			3
Key Socket			0
Chrysanthemum-Shape Socket			20
Magnetic Socket for Placket			5
Mori-pattern Placket			31
Ceiling Placket			1
Chain Placket			3
C-pattern Iron Placket			8
Glove	12 inches		286
"	10 "		10
"	8 "		135

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u> <u>31 Oct.</u>
Moris Cord-shape Socket			15
Lead Glove			1
Handle Glove			5
Iron-Steel Glove			2
PI Setter			15
Metal Setter			52
Anti-aircraft setter			5
Moris Enamelled Setter	No.9		10
"	No.100		4
"	No.140		10
Pneumatic Setter			1
Moris Placket Setter			134
Coach Setter			12
'Nasu' pattern Double Setter			1
Coach Holder	10A		2286
"	50A		867
"	75A		39
"	100A		524
"	150A		0
"	250A		99
Filament Fuse	10A		1
"	15A		2
"	25A		21 1/2
"	30A		13 1/2
"	40A		11
F "	50A	Roll	20
"	100A	"	4 1/2
Metro-Tungsten	Fuse 0.13A		600
"	0.2A		900
"	0.3A		1,000
"	0.4A		970
"	0.6A		1,000
"	1A		1,000
"	1.5A		1,000
"	2A		1,000
"	3A		1,000
"	5A		1,000
Link Fuse	1A		5,160
"	2A		4,800
"	3A		4,950
"	5A		3,069
"	10A		330
"	15A		1,537
"	20A		4,574
"	25A		1,500
"	30A		1,375
"	40A		488
"	50A		2,110
"	75A		0
"	100A		1,850
"	200A		5,157
Plate Fuse	75A	Roll	5
Engrossed Fuse	10A		6
Meter Fuse	3 in a case		216
Earth Pole			1,113
Earth Plate			391
Attaching			330
Mould board			60
Wooden Pole	No. 9x1 1/4		4,916
"	1 inch		1,660
"	No.10x1 3/4		10,224
"	1 1/2		5,251
"	2 inches		4,2210
"	2 1/2		4,059
"	2 1/4		4,086

Articles	Standard Specification	Unit	Quantity 31 Oct.
Cotton Tape		Roll	1
Mica Tapê		"	40
Aluminium Tape		Kg	11500
Antiseptic Tape for (Telegraph Pole Base)		Roll	3
Moris Cocent with Washer	10A		130
Embedded Concent (?)	20A		10
"	10A		130
"			1
Embedded Concent Plate			38
"			5
Embedded Concent Plate			5
Moris Hand Lamp			11
Embedded 'Tokuru' plate	3 'Yon'		4
"	2 "		7
"	3 "		5
"	4 "		1
Gangswitch Plate	1 "		30
"	2 "		13
"	3 "		9
Cloak Hanger Concent			5
Rubber Embedding Block			1
Chain Lamp			2
Eyelet set			24
Counter			6
Car (?) Black	6 3/4		13
"	66l		7
"	12x1 3/4		2
"	12x1 1/2		65
Moris Pole Lamp Fitting			large 3
			small 3
Car(?) Black	8x1 1/2		3
Ceiling Lamp			1
Set Bolt			47
Button Switch			5
'Mogiru' Socket			7
Three-Fold Switch (Iron and Steel tools)			5
Davis (?)	1/8x3/4		13
Pipe Cup	1/2x1		14
"	1/8x3/4		20
Union Cup Ring	1/8x1		16
Pipe Cap	1/8x1/2		19
Wager (?) Cup	1/8x1		33
Cup Ring	1/8x1		58
(Knockout' refuser			56
Lock Nut			10
Sharp Bender	1/8x1		9
Union Coupling	1/8x3/4		19
XXXXXXXX "	1/8x1		19
Lock Nut	1/8x1		56
Normal Bender	1/8x1 1/4		2
Bushing	1/8x1		83
Angle-shape Joint Box			12
C-Shape Log			10
Octagonal			2
C-shape concrete			4
Switch Box			13
Wager Cup	1/16x1 1/2		8
Sevice Elbow	1/16x 1 1/4		28
Cup Ring	1/16x1 1/8		

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u> <u>31 Oct.</u>
Octagonal			1
'Conjojet' Box			1
Octagonal			2
Outlet Box			4
Miniature Lead Box			77
Miniature Joint Box			3
(Iron & Steel Tools)			255
Lunifom Outdoor Lamp			0
Coach Screw			0
Pole Spike			0
Clasp Fitting	6 ft.		0
"	7 ft.		0
"	9.5 "		0
Washer&g	5 "		498
Round Box Cover			3
Nut	5/8		524
Bushing			26
Lock Nut	1/8x1 1/4		60
One-hole saddle	1/8x1		3
Two-hole saddle	1/16x1 1/4		1
Wager Cup	1/8x1 3/4		23
Cup Ring	1/8x1		43
Union Cup Ring	5/8x1/2		19
Cup Ring	1/8x1/2		7
Atabota (?)			38
Sharp Bender	1/8x3/4		3
Bushing	"		38
Sharp Bender	1/8x1/2		27
Normal Bender	1/8x1/12		9
Lock Nut	1/8x3/4		62
Atabota (?)	1/8x1/2		76
Lock Nut	1/8x1/2		90
Bushing	1/8x3/4		1
Bolt	5/8x13ft.		2
"	14ft		1
"	15ft		17
"	16ft		2
"	18ft		1
"	20ft		2
"	40ft		101
"	3/4x24ft		12
Arm stand	50ft		29
"	24ft		1
"	26ft		5
"	30ft		70
"	31ft		1
"	33ft		2
"	36ft		4
"	48ft		3
"	40ft		11
"	41ft		0
Y-Shape Arm Stand			100
Two-hole Strap	7ft		6953
"	9ft		100
"	11ft		11
Three hole strap	12 "		2
"	14 "		505
Five-hole strap	25 "		6
"	36 "		147
Bolt	1/2x15 "		2
"	4 "		1040
"	4.5 "		1617
"	5 "		99
"	6 "		19
"	7 "		309
"	8 "		147
"	9 "		0
"	10 "		24

Articles	Standard Specification	Unit	Quantity 31 Oct.
Bolt	11ft		4
"	12 "		12
"	13 "		1
"	16 "		51
"	3/4x2ft		61
"	5/8x1.5ft		11
"	4 "		203
"	45 "		34
"	5 "		110
"	5.5 "		45
"	5/8x6"		1064
"	7 "		282
"	8 "		270
"	9 "		97
"	10 "		191
"	11 "		11
"	12 "		4
"			40
Round Joint Box			33
Switch Box			
Octagonal			27
Medium-size concrete Box			
Octagonal			4
Miniature-size concrete box			12
Switch Box			
Octagonal			5
Medium-size concrete box cover			19
Medium-size outlet box			117
Cup Ring	1/10x5/8		149
"	1/10x3/4		69
Wager Cup	1/10x3/4		10
Lock Nut	1/14x1 1/2		23
Service Cup	1/10x5/8		30
Wager Cup	1/11x5/8		19
Normal Bender	1/10x5/8		21
Round outlet Box cover			48
Sharp Bender	1/10x3/4		64
Normal Bender	1/10x3/4		129
Lock Nut	1/11x5/8		3
Union Cup Ring	1/10x 1 1/4		2
C-Shape Davis	1/10x5/8		1
Normal Bender	1/10x1 1/4		42
Lock Nut	1/10x5/8		9
Bushing	1/16x1 1/4		10
Service Log	1/10x1		9
Bushing	1/10x3/4		57
Sharp Bender	1/10x5/8		167
Cup Ring	1/10x1		6
Wager Cup	1/10x1		31
Cup Ring	1/10x1 1/2		178
Lock Nut	1/10x3/4		35
Bushing	1/10x1 1/4		81
Lock Nut	1/10x1		44
Normal Bender	1/10x1		11
C-Shape Log	1/10x1		11
Union Cup Ring	1/16x1		5
C-Shape Cross	1/16x1		10
"	1/16x3/4		
(Old Idle Materials)			10,000
Bolt	1/2x4		500
"	5/8x4		50
"	5/8x6		1,500
Twahole strap	2x7x1/2		30,000
"	2x7		300
Five-hole strap			40
Normal Bender	1/10x5/8		30
"	1/10x3/4		

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u> <u>31 Oct.</u>
Cup Ring	1/16x5/8		400
"	1/10x3/4		300
"	1/10x1		100
Sharp Bender	1/16x5/8		50
"	1/16x3/4		50
Lock Nut	1/10x5/8		200
"	1/10x3/4		0
"	1/16x1		200
"	1/8x3/4		200
Bushing	1/18x1 1/4		30
"	1/8x1		0
Knockout Refuser			400
Wager Cup	1/10x5/8		50
B-Shape Sleeve	3.2 m/m		100
S-Shape Sleeve	1.6 m/m		100
"	2.0 m/m		100
Octagonal			
Outlet Box	Medium size		35
'Nokel' Refuser			50
Nichrome Wire			9541
High Pole Stand			49600
Low Pole Stand			30600
Switch Pole Stand			500
Automatic Bulb			174000
No.1 'Sedo' Holder			13000
'Hökoku' Holder			200
Metro-Tungsten Fuse	G 13		19000
"	0.2		9000
"	0.3		9000
"	0.4		9000
"	0.6		9000
"	1A		2000
"	1.5A		2000
"	2A		2000
"	3A		2000
"	5A		2000
Fuse Box			2000
Low-Voltage Petticoat			
Insulator			1710
Flanged Insulator Tube	3/8x6		12500
"	1/2x1		3500
"	1/2x6		17000
"	5/8x1		1000
"	5/8x7		50
"	5/8x15		50
"	2/8x7		1000

(6) Division of Duties

(a) Staff Organization and Service Regulations Division of Duties.

- (1) Matters concerning Counter plans for Demand and Supply of Labor.
- (2) Matters concerning labor administration and Labor Discipline.
- (3) Matters concerning calculation of wages.
- (4) Matters concerning calculation of bonuses

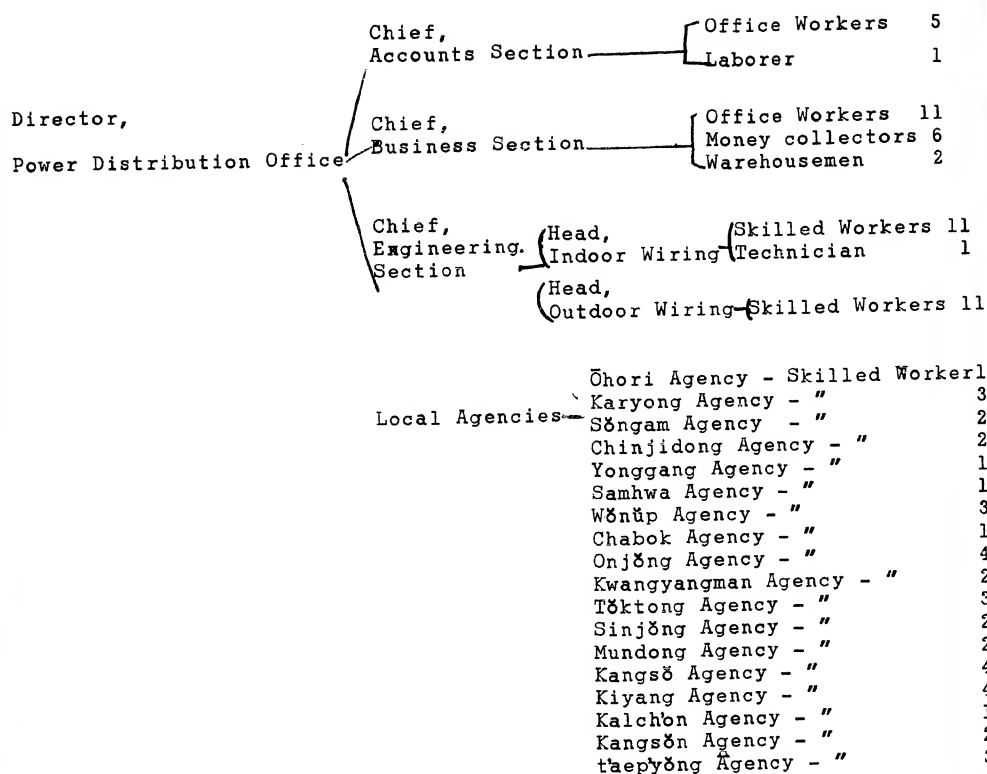
- (5) Matters concerning Social Insurance
- (6) Matters concerning Collection of Labor Statistics
- (7) Matters concerning Personnel Administration
- (8) Matters concerning Accurate Accounts of Travel Expenses of Office employees.
- (9) Matters concerning keeping of Secret of Personnel, etc.
- (10) Matters concerning collection of Personnel Statistics.
- (11) Matters concerning Executive Training
- (12) Matters concerning Reception and Despatch of Documents.
- (13) Matters concerning keepigg of Official Seals
- (14) Matters concerning Management of Apartments and Government Buildings.
- (15) Matters concernng Laws and Books
- (16) Matters concerning Purchase, Distribution, and Control of Welfare Commodities.
- (17) Matters concerning welfare Facilities for Employees
- (18) Matters concerning Health, Comfort, and aid of employees.
- (19) Matters concerning Welfare and Cultural Works.
- (20) Matters concerning Apartments and Government Buildings
- (21) Matters concerning Construction and Repair of Apartments and Government Buildings
- (22) Matters concerning Adjustment and Custody of Supplies.
- (23) Matters concerning Composition and Execution of Budget.
- (24) Matters concerning Settlement of Annual, Quarterly, and Monthly Accounts.
- (25) Matters concerning Adjustment and Preservation of Account Books.
- (26) Matters concerning Cost Accounting
- (27) Matters concerning Amortization
- (28) Matters concerning Custody of Property.
- (29) Matters concerning Establishment of Annual and Quarterly Fund Plans.
- (30) Matters concerning Sundry Taxes, Loans, and Debts.

- (31) Matters concerning Adjustment and Preservation of Vouchers and Account Books.
- (32) Matters concerning Accommodation and Operation of Funds.
- (33) Matters concerning Receipts, Disbursements, and Custody of Cash and Securities.
- (34) Matters concerning Payment of Salaries and Allowances.
- (35) Matters not Falling under Other Sections.

Business Section:

- (1) Matters concerning Establishment and Execution of Operation Plans.
- (2) Matters concerning Composition of Budget of Business Receipts.
- (3) Matters concerning Settlement of Business Receipts.
- (4) Matters concerning Sales of Electric Bulbs.
- (5) Matters concerning Regulation and Operation of Power Supply.
- (6) Matters concerning Inspection of Business
- (7) Matters concerning Compilation of Business Statistics and Business Reports.
- (8) Matters concerning Establishment of Counter plans for Prevention of Wasteful Use.
- (9) Matters concerning Calculation and Assessment of Power Rates.
- (10) Matters concerning Investigation of Tendency and Real Condition of Power Consumption.
- (11) Matters concerning Adjustment of Supply Areas.
- (12) Matters concerning Adjustment and Collection of Power Rates and Other Receipts.

Staff Organization:



B. Order System.

All orders came from the Power Control Bureau, Ministry of Industry, to the Power Distributing Department, Pyŏngan-namdo, then these orders were relayed by the same Department to the Chinnampŏ Power Distributing Office. Generally speaking, the Communist leaders put more energy into the political phase rather than the industrial phase. Thus, in order to infiltrate Communism among the ranks of employees, they organized Labor Party cells in all factories, where the cell chairman executed the orders transmitted by the Chinnampŏ City Chapter of the Labor Party. So non-Party members had not a particle of authority in all workshops, including power distributing agencies, where only the party bosses act like puppet players.

(3) Attendant Undertaking

D. Attendant Property

a. Land

Name of Power Plant	Transformer Substation	Office	Employees Homes	Dormi- tory	Water- way	Reser- voir Annex	Re- marks
		Pyöng	Pyöng				in City
		899	1589.25				outside
		620					the City
							(Agency)

a. Buildings

Kind Particulars	Power Transf. Plant Subst.	Employees Home	Dormi- & story house	Ware- house Annex	Office	Other	Re- marks
Story		One & two storied	One Stored		One & two storied		One Emp. home 1 Off.bldg 2 storied
in city		390.07					included
Floor		Pyöng	194.5 "		76.75		
Area	Agency				143.00		
Roof		Tile-roof	Tile-roof		Tile-roof		

Power Distributing Equipment (Destroyed)

Transformer Substation	Lines	Section	Length	Extension	Number of Supportin Poles	No. of Pole-TV	Re- marks
No.1 Substatin	Trunk Line	40-49	380m	4560m	10	12	
"	No.2						
	Connecting "	7-17	400m	1200m	10	6	
"	Station Line	1-14	560m	1680m	14	3	
"	Flour Mill Line	1-12	480m	1440m	3	3	
"	Custom house L.	2-11	360m	1080m	1	4	
"	New Inspection Line	37-38	70m	210m	1	-	
Kihwa Subst.	Common Power Line	5-12	315m	1890m	2	4	
"	Old trunk Line	3-10	315m	945m	1	2	
			2880m	13005m	47	34	

31 August 1950

Power Distributing Dept,
Pyongnan-namdo)Balance Sheet

Debit		Credit	
<u>Items</u>	<u>Amount</u>	<u>Items</u>	<u>Amount</u>
(Fixed Assets)		(Capital)	
Power Transmission Equip- ment	9,707,048.13	Fixed Fund	26,460,409.25
" "	6,330,008.97	Floating Fund	3,678,000.00
" Distributing Equipment	10,366,492.13	Amortization Reserve	1,009,573.15
Vehicles & Carts	313,312.82	Bonus Reserve	136,042.21
Working tools & Supplies	195,393.90	Welfare Outfit Reserve	804,521.41
Employees' Homes	815,092.10	(Liabilities)	
Welfare & Cultural Outfit	12,271.10	Accounts Payable	45,000.00
		Unpaid Debts	7,703.40
(Floating Assets)			
Stores	8,438,763.57	Advance Receipts	2,298,852.85
Goods to arrive	732,534.93	Money in Custody	765,823.95
Deposit	9,797,415.01	Unpaid Accounts	905,568.85
Cash	131,580.11	Temporary Receipts	2,334,799.80
(Claims)		Advance Receipts for	
Accounts Receivable	12,936,804.56	Contract works	3,514,252.96
Unsettled Claims	2,040,599.04	(Special Debts)	
Advance Payments	639,285.20	Legal Deduction from	
Guarantee Money	150,124.00	unpaid Profit	291,036.95
Temporary Loans	331,891.38	Unpaid-in Floating Fund	15,302,516.22
Uncollected Money	3,187,738.67		
Temporary Payments	867,108.07	Debts for Goods in cu- stody	5,552.37
Advances for Contract Works	1,797,939.87	(Internal Account)	
Control Bureau Accounts	6,352,023.59	Adjustment of Estimated	
(Special Property)		Accounts	280,414.00
Advance Payment Trans- action Tax	150,000.00	(Profit)	
Legal Deduction from		Profit brought forward	
Profit of Previous Period	332,012.60	from Previous Period	16,064.115.11
Goods in Custody	5,552.37	(Internal Account)	
(Internal Account)		Head Office & Agencies	
Head Office & Agencies	110,222.94	Accounts	4,877,868.70
Accounts		(Profit)	
Welfare Loans		Profit of Current period	7,429,956.70
Investment in Welfare Outfit	619,280.08	Head Office & Agencies	
Construction Balance		Account	4,877,868.70
Account	1,172,057.18	Profit	7,429.956.70
(Loss)		(Profit of Current Period)	
Loss brought forward from Previous Period	8,674,455.03		
Loss of Current Period			
Total	86,207,007.35		86,207,007.35

From 1 July to 31 August 1950
Power Distributing Dept,
Pyöngan-namdo

Statement of Profit and Loss

Disbursements of		Receipts	
<u>Items</u>	<u>Amount</u>	<u>Items</u>	<u>Amount</u>
General Expenses of		Electric Light Rates	5,778,119.92
Power Distribution	1,547,830.27	Electric Power Rates	8,137,646.70
Repairs of Power			
Distribution	562,441.62	Electric Heat Rates	880,508.00
Adjustment of Power		Special Power Rates	919,412.09
Rates	4,000,000.00	Additional Power Rates	151,193.95
Transaction Tax	796,596.35	Sundry Profit from	
Deduction from Profit	1,731,916.15	Supplies	186,735.00
Fine	438.20	Interestion Receipts	41,500.00
Investigating Expenses			
for wasteful use	29,619.48	Miscellaneous Profit	1.65
Profit of Current		Profit from Property	
Period	7,429,956.17	Sales	3,680.13
Total	16,098,798.24	Total	16,098,798.24

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Actual Condition
of
The Kangsø Electric Machine Shop

Board of Maintenance
Kangs8 Electric Machine Shop
CHO Tae-gwan, Chairman
KIM Chang-chip, Paymaster.
YI Yong-ki, Operation Chief.

Balance Sheet

As of 30 June 1950

<u>Items</u>	<u>Amount</u>	<u>Items</u>	<u>Amount</u>
(Fixed Assets)	1,268,689,800.01	Capital	223,896,662.84
Operational Fixed Assets	126,868,980.01	Capital	223,896,662.84
Factory Lot Chief		Fixed Fund	127,096,662.84
Mine-levels	1,264,884.60	Floating Fund	96,800,000.00
Factory Buildings	57,266,446.57	Reserve	3,689,780.24
Apartments	18,887,952.00	Profit Reserve	
Welfare Facilities	482,511.15	Reserve for Amorti-	
Structures	13,670,047.07	zation	3,594,080.24
Tracks Machine		Managers Fund Account	
Apparatus	30,002,001.48	Reserve ofc Fund	95,700.00
Transportation Ways		Welfare Outfit Fund	
ships	315,679.36	Loans Payable	15,026,000.00
Vehicles	334,264.75	Bond Loans	3,300,000.00
Tools & Equipment	4,645,193.03	Short-term Loans	11,726,000.00
Spare Machines		(Liabilities)	99,033,730.23
Idle Fixed Assets		Debt on Purchase	37,278,443.79
Property for Redemption		Debts of After pay-	26,158,352.77
Internal Construction	2,837,536.95	ment Unpaid Debt	11,120,091.02
Construction &			
Expansion	2,379,042.75	Short-term Debts	19,613,255.35
Repairs		Advance	8,724,286.47
Stores		Money in Custody	338,481.85
Special Deposit for		Unpaid Accounts	
Legal Amortization	1,458,494.00	unpaid Expenses	
(Floating Assets)	137,561,849.76	Advance Collection	
Material Property	42,946,258.47	temporary Receipts	3,909,422.78
Raw Materials	19,753,787.01	Control Bureau	
Fuel	6,992,121.37	account	38,192,813.67
Packing Materials		Compensation Money	40,294.64
Sundry Stores	15,362,301.64	Special Debt Unpaid	16,509,012.89
Unfinished Goods	22,567,441.03	money for Amortization	
Half-finished Goods	16,083,453.70	Unpaid Transaction Tax	1,369,950.48
Circulating Property	43,767,416.03	Unpaid Deduction from	
Finished Goods	39,794,205.37	Profit	1,277,891.45
Bad Products	577,417.02	Unpaid Surplus Profit	597,380.00
By-Products		Advance Receipts from	
Operation Fragments	896,780.91	Bond	2,261,497.35
Bungles	818,753.48	Unpaid Floating Fund	5,500,293.61
Goods for shipment	1,680,259.25	Debts on goods in	
Currency Property	848,175.26	custody	2,000.00
Bank Deposits	837,330.10	Internal Accounts	7,940,967.54
Cash	10,845.16	Head Office & Agencies	
Claims	74,927,892.41	Accounts Construction	
Claim by Sales	61,430,568.99	Balance Account Adjust-	
Claim by Exchange	39,261,111.53	ment of Estimated	
Uncollected Claims	22,169,457.46	Accounts	7,940,967.54
Sport term Claims	12,490,948.89	Profits	14,926,230.59
Letters of Credit		Profit brought forward	
Issued Profit of		from Previous Period	14,926,230.59
Previous Period	6,131,776.70	Profit of Current Period	
Guaranty-Money	1,210,292.70		
Accommodation-money	4,262,479.21		
Accounts Receivable	187,388.04		
Prepaid Expenses	699,012.24		
Uncollected Profit			
temporary payments	1,006,374.53		
control bureau account			
Special Property	24,727,937.16		
Advanced Transaction			
Tax	396,310.00		

<u>Items</u>	<u>Amount</u>	<u>Items</u>	<u>Amounts</u>
Advance Deduction from Profit	2,456,540.62		
Adjustment money for Uncollected Price	850,179.69		
Uncollected Floating Fund	21,024,906.85		
Goods in Custody			
Internal Account	2,030,170.57		
Head Office & Agencies Accounts			
Welfare Outfit Account			
Welfare Accommodation Fund	1,896,653.79		
Investment for Welfare Outfit Fund			
Construction balance	133,516.78		
Loss	12,068,017.47		
Loss brought forward from previous period			
Loss of Current period	12,068,017.47		
Total	381,022,384.33	Total	381,022,384.33
Idle special pro-party		Special Fund	
Idle Raw Materials			
Idle Stores			
Idle Finished goods			
Special claims			
Deposit			
Total		Total	
Basic Holding of Floating property		Holding of Raw materials	
Raw Materials & Stores		Estimated Fund for Basic Construction	
Unfinished & Half-Finished goods		Aggregate of Delivered Amounts for Basic Construction	
Finished Goods		Estimated Amount for Amortization	
currency Property		Aggregate of Amortization	

Statement of Profit and Loss
(From 1 April to 30 June 1950)

Board of Maintenance
Kangsŏ Electric Machine
Shop.
CHO Tae-gwan, chairman.
KIM Chang-chip, Paymaster
YI Yong-ki, operation
chief.

<u>Kind</u>	<u>Loss</u>	<u>Amount</u>	<u>Profit</u>	<u>Amount</u>
Profit & Loss in Production	Unfinished Goods brought forward from Previous Period	22,068,991.87		All Production Cost in Plan 103,631,680.95
	Raw Material cost	120,946,147.79		Half Finished Goods
	Labor cost	6,630,850.07		Bad Products
	Expenditure	4,366,409.20		By-Products
	Amortization cost	6,896,000.00		Operation Tragnents
	Indirect Cost in control & Sales			Bungles
				Unfinished Goods by End of Period
				42,028,294.01
				Deductgion 589,985.02
				Production Loss 14,643,428.45
	Total (Production Profit)	160,898,398.93		
<hr/>				
Profit & Loss in Sales	Sales Cost in plan	56,409,386.46		Receipt from Sales 70,297,091.20
	Half Finished goods			Finished Goods
	Bad Products			Half Finished goods.
	By-Products			Bad Products
	Operation Fragments			By-Products
	Direct Expenses for Sales			Operation Fragments
	Payment for price Adjustment	1,776,087.81		Bungles
	Transaction Tax	6,672,126.92		Grant for Price adjustment 310,495.39
	Total (Sales Profit)	5,749,885.72		
	Total	70,607,586.91	Total	70,607,586.91
<hr/>				
Profit & Loss in Undertaking	Deduction from Profit Payment of Surplus Profit Bonus	5,205,678.92		Production Project sales Profit 5,749,985.72
	Bonus			Balance from Estimated Allotment
	Balance from Estimated allotment	XX 8,957.89		Interest Receivable 299,041.80
	Interest payable	XX 748,671.53		Damages for Breach of Contract
	Fine	25,619.00		Miscellaneous Profit 12.89
	Damages for Breach of Contract	343,739.06		
	Misallaneous Losses	19.15		Undertaking Loss 14,927,123.89
	Production Loss (Undertaking Profit)	14,643,428.45		
	Total	20,976,164.30	Total	20,971,114.30

<u>Kind</u>	<u>Loss</u>	<u>Amount</u>	<u>Profit</u>	<u>Amount</u>
Appraised Value of Property			Undertaking Profit	
Amount of Property Sales			Profit in Appraisal of Property	2,859,106.42
Loss by Accidents			Profit in Sales of Property	
Special Depreciation			Loss of Current Period	12,068,017.47
Undertaking Loss	14,927,123.89			
(Profit of current Period)				
Total		14,927,123.89	Total	14,927,123.89

Cash Balance as of 15 November 1950 124,490.67 W8n

The Board of Maintenance,
 Kangs8 Electric Machine Shop
 CHO Tae-gwan, Chairman
 KIM Ch'ang-chip, Treasurer

Specification of Fixed Property

Land

<u>Kind</u>	<u>Area</u>	<u>Particulars</u>
Farm	111,500 m ²	Building Lot inside Factory Compound
Miscellaneous forms in Lot	431,347.4 m ²	"
Miscellaneous Land	3,702.60	Building Lot of Apartments outside Factory Compound
"	2,310.00	Building Lot inside Factory Compound
Forestland	7,365.6	Building Lot of Apartments outside Factory Compound
"	55.1	Building Lot inside Factory Compound
Building Lot	51,480	Building Lot of Mess Hall outside Factory Compound
"	6,600	Building Lot inside Factory Compound
Paddy Field	29,700	"
Farm	82,559	Kitchen Garden of Employees outside Factory Compound
"	166,551	Playground outside Factory Compound
"	837,982.6	Building Lot of Apartment outside Factory Compound
Total	1,732,670	

<u>Specification of Fixed Property</u>				<u>Buildings</u>
<u>Kind</u>	<u>Structure</u>	<u>No. of Hours</u>	<u>Floor Area</u>	<u>Appertaining Field</u>
Miniature Trans- former Factory	Brick Building with Iron Pipe State	1	Py8ng 1,221	Electric Machine Section, production Dept.
Working Factory	Brick Bldge Slate Roofed	1	133,330	Working Section, Engineering Dept.
Air Compressor Room	"	1	8,509	Working Section Production Dept.
Casting Factory	Brick Bldg with Iron Pipe Slate	1	1,040,227	Casting Section, Production Dept.
Copper Wire Factory	Iron Pipe Slate Roofed	1	1,073,812	"
Insulator Fact.	Wooden Bldge Slate Roofed	1	7,850	Insulator Section, Production Dept.
Varnish Mfg. Fact.	"	1	128,000	"
Saw Mill	"	1	18,077	Working Section, Construction Dept.
Carpenter's Shop	"	1	1,010	"
Empire Cloths Factory	Wooden Bldg, tile Roofed	1	40	Insulator Section Construction Dept.
"	Wooden Bldge, Slate Roofed	1	79	Repair Section, Engineering Dept.
Gen Mft. Factory	Brick Bldg, Tile Roofed	1	110	Working Section, Construction Dept.
Large Transformer Factory	Ferro-concrete, Slate Roofed	1	1,066.500	
Blacksmith's shop	Wooden Bldge, Slate Roofed	1	59.0	Working Section Engineering Dept
Pump Room	Brick Bldg, Tile Roofed	1	18.0	Repair Section "
"	Wooden Bldg, Tile Roofed	1	38.0	"
Mess Boiler Room	Brick Bldg, Tile Roofed	1	38.0	"
Dormitory Boiler Room	" 2	1	32.0	
Pump Room	Wooden Bldg, Tile Roofed	1	12.0	Repair Section
Locomotive Shed	Steel Reinformements	1	23.0	Repair Section, Business Dept.
Toilet		4	20.0	

<u>Kind</u>	<u>Structure</u>	<u>No.of Hours</u>	<u>Floor Area</u>	<u>Appertaining Field</u>
Toilet	Steel Reinforcements	1	3	
Public School				
toilet		1	24	
Mess Hall Toilet		1	36	
Substation Toilet		1	1.5	
Dormitory "		5	10	
Office Room	Brick Bldg, Tile Roofed	1	311,514	
Junior Party Office	"	1	65.0	
Trade Union "	Wooden Bldg, tile Roofed	1	31.5	
Repair Section				
Office		1	34.0	
Construction				
Dept Office		1	61.0	
Shipping Bureau				
Office		1	30.8	
Land Transportation				
Bureau Office		1	25.0	
Welfare Bureau				
Office		1	39.0	
Higher Technicians' Training School	Brick Bldg, Tile roofed	1	278.0	
Technicians' Training School	Two Storred wooden Bldg, Tile roofed	1	258.0	
Office Building	Wooden Bldg, tile Roofed	1	6.5	General Affairs Dept.
Guard box				
Guard House	"		34.0	"
Dormitory Toilet	"	2	22.0	"
Office Bldg. "	"	2	2.5	"
Warehouse	"	5	1,000	"
"	"	1	82.5	Building Dept
No.1 Mess Hall				
Storeroom	"	13	26	Working Section, Construction Dept.
No. 2 "	"	15	30	General Affairs Dept.
Mess Hall No.1				
Storeroom	"	1	36	"
Storeroom	"	1	70	"
"	"	1	10	"
"	"	1	40	Welfare Bureau
Barber shop Storeroom	"	1	7.5	"

<u>Kind</u>	<u>Structure</u>	<u>No. of Hours</u>	<u>Floor Area</u>	<u>Appertaining F.</u>
Public School Warehouse	Wooden Bldg, Tile Roofed	1	44.0	General Affairs Dept.
Oil Warehouse	"	1	25.0	Business Dept
Substation Warehouse	"	1	11.0	Engineering Dept.
No.2 Mess Hall Storeroom	"	1	14.0	General Affairs Dept
No.1 Storeroom	Brick Bldg, Tile Roofed	13	364	"
No.2 "	Wooden Bldg, " "	15	67.5	"
No.3 Storeroom	Wooden Bldg, " "	7	224	"
No.4 "	"	12	648	"
No.5 "	"	12	240	"
No.6 "	Brick Bldg, "	12	264	"
No.7 "	Wooden Bldg, "	36	432.0	"
No.8 "	"	1	83.0	"
No.9 "	"	24	1997.0	"
No.10 "	"	6	252.0	"
No.11 "	"	3	157.5	"
No.12 "	" Slate Roofed	2	105.0	"
Office Room	Wooden Bldg, tile roofed	3	115.0	"
"	Ferro-Concrete, tile roofed	10	35.0	"
"	Wooden Bldg, tile roofed	1	750.0	"
"	"	1	30.0	"
Construction Office	"	1	33.0	"
"	"	1	17.5	"
"	"	1	38.0	"
"	"	1	26.0	"
"	Wooden Bldg, Slate roofed	1	15.0	"
"	Wooden bldg, tile roofed	2	48.0	"
Bathroom	"	1	79.4	"
Dormitory	Brick bldg, tile roofed	1	570.0	"
"	Brick bldg, Zinc roofed	1	28.0	"
Bathroom	wooden bldg, tile roofed	1	81.8	Construction Dept
Dormitory	"	1	40.0	General Affairs
Mess Hall	" (two storied)	1	27.6	"

<u>Kind</u>	<u>Structure</u>	<u>No. of Hours</u>	<u>Floor Area</u>	<u>Appertaining F.</u>
People's Youths Hall	Wooden Bldg, tile roofed	1	25.0	General Affairs Dept.
People's Youths Propaganda Hall	" (two storied)	1	258	"
Hospital	"	2	90	"
"	"	1	28	"
Public School	"	1	185.3	"
Public School	"	1	94.2	"
No.1 Barbershop	"	1	27.5	Welfare work Bureau
No.2 Barbershop	Wooden Bldg, Tile roofed	1	4	"
Booth	"	1	44	General Affairs Dept.
Welfare Mess Hall	"	1	16.0	Welfare work Bureau
Welfare Tailor shop	"	1	12.0	General Affairs Dept.
Dormitory Washroom	"	1	60.0	Business Dept
Warehouse Office	"	1	12.0	"
People's Youth Office	"	1	25.0	General Affairs Dept
Substation Office	"	1	81.0	Engineering Dept

Specification of Fixed Property Structures

<u>Kind</u>	<u>Structure</u>	<u>Type</u>	<u>Extension Area</u>	<u>Use</u>	<u>Appertaining Field</u>
Railroad			10,000 m	Transportation	
Reservoir	Ferro-Concrete Pool		25mx6x1.5m	Water Distribution	
Distributing Reservoir	"		Depth 10 m Diameter 7m	Drinking	Engineering Dept
Settling Basin	"		30mx40mx3m	Sea water Precipitation	
"	"		30mx40mx3m	"	
Telegraph Poles	Wooden Poles		87	Power Distribution inside Factory	"
"	"		110	Power Distribution for Mess Hall	"
"	"		71	Communication Lines	"

<u>Kind</u>	<u>Structure</u>	<u>Type</u>	<u>Extension</u>	<u>Area</u>	<u>Use</u>	<u>Appertaining Field</u>
Iron Tower	Wooden Pools				Power distri- bution for sub- station	Engineering dept
Water works	Iron Pipe		6,700m		Water Supply to factory & Homes	"
Well	Ferro-concrete	Large type	Diameter 5m Depth 10m		Factory & Homes "(for waterworks)	"
Well	Ferro-concrete	medium size	Diameter 15m Depth 5m		Water supply to Factory homes	Engineering Dept
Lamp Tube			Perimeter 6m Hight 30m	5	Blast furnace	
"			Perimeter 6m Hight 35m	2	Reverberatory Furnace	
"			Perimeter 5m Height 25m		Dormitory Insulator Fact.	
Bridge				1		
Air Pipe				one set		
Sewer				5,000m		
Road				5,600m		
Distributing Wire inside Factory	Substation Factories	Overhead Wire	Copper Wsre 2,839m		3.3KV	
Dormitory Distribut- ing Ware	" Mess Halls	"	" 4,052m		"	
Telephone Wire	Communica- tion line in- side & out- side factory	"	Aluminum Wire 3,105m			

Specification of Fixed Property

Ships

<u>Name</u>	<u>Type</u>	<u>Standard Size</u>	<u>Shipbuilder</u>
Motor 50HP	Propeller	Breadth Depth Length 3.15m x 1.08m x 13.2m	Hiroshima shipyard

Report of Fixed Property Engineering section

<u>Name of Machines</u>	<u>Standard Size</u>	<u>Unit</u>	<u>Quantity</u>	<u>Use</u>	<u>Remarks</u>
Lathe	6'		7		
"	8'		7		
"	12'		1		
"	15'		1		
Puppet Lathe	6'		1		
Cutting Machine	6'		1		
Shaving Machine	8"		1		
"Hopping"	24"		1		
Milling Machine	3"		1		
"Puppena"	6'		1		
Shaver	24"		1		
"	22"		1		
"	18"		1		
Bolban	14"		1		
"	18"		2		
"Radial" Bolban			1		
Electric Motor	20HP		2		
"	15HP		1		
Grinder			2		
Air Compresssr	100HP		1		
Air Hammer	1/4 "		1		
"	1/8 "		1		
"	1 "		1		
Blower			3		
Bolban	25"		1		
Fixed Switch	3x6"		1		

Power Section

1. Transformer	66/11 KV 19 5,000KVA	2	Reception Substation Equipment of electri- city
2. "	66/3.3 KV 19 2,000 KVA	3	"
3. "	11/3.3 KV 1,000 KVA	4	Power Distri- bution inside Factory
4. Meter-Trans- former	69KV 3 # VTR-260	1	Installation finished
5. "	66KV 1 # OGL-C	2	"
6. Oil Switch	69KV SK 280-503	1	"
7. "	64KV SP-1008	1	"
8. "	66KV Insulator Type	1	"
9. "	1.15 KV SKR 268-253	1	"
10. "	33KV SKR 268-10A	5	"

<u>Name of Machines</u>	<u>Standard size</u>	<u>Unit</u>	<u>Quantity</u>	<u>Use</u>	<u>Remarks</u>
11. Meter transformer	69KV 49-260		4	Installation finished	One spare stock
12. Meter-transofmer	69KV 6 W-L		2	"	"
13. Meter-transformer	66KV T 134MT-8		1	"	One spare stock (needs repair)
14. Mercury-Vaper Rectifier	H38-0-20 200P		1	"	for Storage Battery
15. Storeage Battery			54	"	for Power Source
16. 66KV Power Receiver			1	"	
17. 3.3KV Switchboard			1	"	
18. 11KV Switchboard			1	"	
19. 3.3KV Switchboard			5	"	
20. Transformer	3.3/22KV 50 KVA		2	"	Substation Equipment
21. "	3.3/22KV 20 KVA		2	"	"
22. Telephone Switchboard	Magnetic type		1		for Switchboard room one office rooms.
23. Telephone Set	Table telephone		15	"	"
24. "	Wall fixture		9	"	"
25. Transformer	3.314/2200 75 KVA		4	"	for Factory power and Lighting
26. "	11KVA		3	"	"
27. "	15KVA		2	"	"
28. "	20KVA		4	"	"
29. "	30KVA		6	"	"
30. "	40KVA		2	"	"
31. "	50KVA		13	"	"
32. "	75KVA		2	"	"
33. "	100KVA		1	"	"
34. "	300KVA		2	"	"
35. "	3.3KV/200-110 25KVA		2	"	for Employees Homes & Pump Rooms
36. "	10KVA		11	"	"
37. "	15KVA		7	"	"
38. "	22KVA		7	"	"

<u>Name of Machines</u>	<u>Standard size</u>	<u>Unit</u>	<u>Quantity</u>	<u>Use</u>	<u>Remarks</u>
39. Transformer	3.3KVx220-110V 30 KVA		4	Installation finished	for Employees homes & pump rooms
40. "	50 KVA		1	"	"
41. "	100 KVA		1	"	"
42. "	150 KVA		1	"	"

Report of Fixed Property Casting Section

'Padial' Bolban		1
Electric Motor	10HP	5
"	70HP	1
"	30HP	2
"	15HP	2
Bolban		1
Blower	30HP	3
Grusher	'Hupet' type	1
Drying Oven		4
Welding Machine		1
Crane	25 "	1
"	5 "	3
Electric Furnace	3 "	1
Reverberatory		
Furnace	2 "	3
Drying Oven	Miniature type	2
Cupola	"	2

Report of Fixed Property Tools Section

Table Bolban	Miniature type	3
Power Press	30 "	3
Hand Press		7
"Bulchange" Press		2
Notching Press		10
Iron Plate cutter	6 "	1
"	3 "	1
Milling Machine		3
Marble cutter		16
" Grirder		2
Welding Machine		1
Electric Motor	30HP	4
"	25HP	1
"	10HP	8

Report of Fixed Property

Electric Machines Section

<u>Name of Machine</u>	<u>Standard size</u>	<u>Unit</u>	<u>Quantity</u>	<u>Use</u>	<u>Remarks</u>
Oil Press	500 #		1		
Electric Motor	5 HP		5		
"	3 HP		1		
"	10 HP		2		
"	20 HP		3		
Shaving Bolban			1		
"Padial" Bolban			1		
Iron Plate Cutter	6'		1		
Notching Press	38'		5		
Front Bolban	6'		2		
Lathe	6'		1		
Press			2		
Blower			1		
Grinder			1		
Power Press			3		
Rotary Cutter of					
Iron Plate			1		
Varnish Painting Tank			1		
Welding Machine			1		
Crane	50 #		1		
"	30 "		1		for installing electric motors

Report of Fixed Property

Engineering Section

Lathe	6'	4	Installation completed
Bolban		1	"
Shaver	12"	1	"
Iron Plate Cutter		1	"
Steam Boiler	6x30	1	"
"	43 #	1	"
"	Tobacco Pipe type	1	"
"	Asahi type	1	"
Water Pump	6" 20 KW	2	"
"	15 HP	2	"
"	10 HP	2	"
Water Pump	15 HP	1	"
"	25 HP	1	"
"	30 HP	1	"
"	15 HP	1	"
"	10 HP	1	"
"	7.5HP	1	"
"	10 HP	1	"
"	20 HP	1	"
"	2 HP	1	"
"	3 HP	1	"
Electric Motor	5 HP	1	"
Turbine Pump	25 HP	1	"
Blower	15 HP	1	"
"	W HP	1	"
"	7.5 HP	1	"
Electric Motor	20 HP	1	"
"	10 HP	1	"
Welding Machine	Electricity	1	"
"	Oxygen	1	"
Lathe	12'	1	"
"	5'	1	"

Name of Machine	Standard size	Unit	Quantity	Use	Remarks
Electric Hammer			1	Installation completed	
Grander			1	"	
Vacuum Pump			1	"	
Varnish Making Machine		set	1	"	
Sawing Machine			1	"	
Planning Machine			1	"	
Boring machine	for lumbering		1	"	
Nail making machine	4"		1	"	

Report of Fixed Property

Electric Section

Low Voltage Distri-	2500/150A		2	Installation completed	
buting Electrode			2	"	
Electric Motor	10 HP		1	"	
"	5 HP		4	"	
"	20 HP		1	"	
"	30 HP		1	"	
Vacuum Pump			2	"	
Tank			1	"	
Transformer coiling machine			2	"	
Iron Core Compressor			6	"	
Power Press	30 #		2	"	
Hupington Press			1	"	
Iron Plate Cutter	6'		4	"	
"	3'		2	"	for installing electric motor
Crane	3 #		2	"	
Bolban			3	"	
Welding Machine	Electric		2	"	
Blade Grinder			6	"	
Shaver			1	"	
Lathe	12'		2	"	
Lathe	8'		9	"	
"	6'				

Report of Fixed Property Rolling Section

Electric Motor	500 HP		2	for crudely finished rolling	
Power Switchboard			2	500 HP	
Starting Control	3.3/200A	set	2	"	
Oil Breaker			2	"	
Single Phase-transformer	3.3/105.250A		1	OCB Control	
Electric Motor for Oil Pump	5 HP		1	Oil Transportation	
Decelerator	2:1		1	for crude rolling	
Flashing Wheel			1	"	
Cambers			1	"	
Rolling machine	350#		1	"	
"	80"		1	"	
Cambers	80"		1	for Finished rolling	
Charging machine	'Pako' type		1	for Heating Furnace	
Electrid Motor	50HP		1	"	
Resistor		set	1	"	
Heating Furnace	Series type		1		
Blower	5 HP		1		
Windlass of finished goods			2		

Name of Machine	Standard size	Unit	Quantity	Use	Remarks
Thin Plate Roller	400 ϕ /	set	1	for rolling thin plates	
Reduction Gear	100 HP		1	"	
Electric Motor	100 HP		1	"	
Resistor		set	1	"	
Heating Furnace	Intermittent system		1	"	
Blower			1	"	
Hot Searing machine			1		
Electric Motor	30 HP		1	for cutting machine being used	
Roller		drum	29		
Electric Motor	30 HP		6	"	
Decelerator			6	"	
Distributor			6	"	
Roller	for horizontal rolling		10	"	
Switch			10	"	
Electric Motor	30 HP		7	"	
"	40 HP		1	"	
"	20 HP		1	"	
Decelerator			1	"	
Outgoing machine			1	"	
Electric Motor	5 HP		1	"	
Crane	10 Φ		1	"	Equipping Electric motor
"	3 "		7	"	
Telephone Set			1	"	
Blower			1	"	

Report of Fixed Property

Inspection Section

Field Regulator	medium type		2	being used
Distributor	3.5/50A		2	"
Meter-transformer	40VA 3.3/110		7	"
"	35 100/5A		2	"
Single phase conductor Voltage Regulator	25 KVA		3	"
Test Desk	for Low Voltage	set	7	"
Electromagnetic switch	220 P			
"	60 A		4	"
"	100A		6	"
Storage Battery	200V			
"	100 Kg		20	"
"	150 "		1	"
Automatic Conductor Voltage Regulator	40 KVA		1	"
Changeover Disconnecting Switch	3.3/150A		1	"
Switchboard	for Low Voltage	set	1	unusable
Electric Motor	30 HP		3	being used
"	15 HP		1	"
Distributor	200V 150A		2	"
Direct current motor	9 KVA		3	"
Insulator	60 KVA		12	"
Oil Test Machine	5 KVA 250 KV		1	"

Transformer	650/267V	3	being used
for "Test	10 KVA	1	"
Transformer	30 KVA	1	"
"	3 KVA	1	"
"	4 KVA	1	"

Report of Fixed Property (Meters) 14 November 1950

No.	Articles	Type	Measurement	Direct current alternative "	Quantity	Re- marks
1	Voltmeter	DPV	150/300V	A.C. & P.C.	1	
2	"	EP-2	0-300V	"	1	
3	"	155	0-150V	A.C.	2	
4	Vacuum Voltmeter	B.R.C-75	0-150V	A.C.	2	
5	Voltmeter	MP-1	0-2A	D.C.	1	
6	"	SP-C	0-25A	A.C.	1	
7	"	D.P.A.	25/50A	AC&DC	1	
8	"	370	25/5A	"	1	
9	"	K-370	0-5A	A-C	1	
10	"	155	0-5A	"	1	
11	Insulation Re- sistance meter	L-5	4-2000 M ²	100V	1	

Survey of Operation Conditions

1. Prior to 30 June 1950

(1) Labor. In carrying out the basic plan by this factory, a shortage of material was keenly felt. Moreover, due to its unfavorable geographic and social conditions, not only the labor distribution but the daily attendance of planned laborers was found insufficient. The following table will prove this fact.

Month	Monthly Planned Laborers	Monthly Registered Laborers	Average month. Registered Laborers	Registered Laboers at month-end	Monthly at- tendance work- ing hours
January	5,754	39,383	1,575	1,521	37,387
February	11,754	32,750	1,573	1,503	34,575
March	1,848	40,586	1,503	1,435	37,933
April	1,848	45,083	1,501	1,501	42,435
May	1,960	47,665	1,538	1,548	45,285
June	2,021	49,039	1,634	1,654	46,678

]

Labor was organized with working units (brigades) as as the basic nucleus of production, dividing workers under the control of unit heads and higher bosses at each workshop for combined production.

(2) The working structure was formed with five sections as follows (prior to April 1950).

Production Department - Electric Machine Section

Casting Section

Wiring Section

Insulating Section

Tools Section

Early in April, this structure was changed. They abolished the production Department, and started new operation at each workshop as an independent unit. The table of the new structure is as follows:

Chief Engineer - Major Workshop

Minor Workshop

Casting Workshop

Engineering Workshop

Rolling Workshop

Wiring Workshop

Insulating Workshop

Tools workshop

Industrial Division

(3) Production

a. Electric motors and ~~TRANSFORMERS~~ Transformers.

These are chief products of this factory. The original plan was to produce an average 400 transformers and 150 electric motors per month. But because of a very limited arrival of silicon steel plate, the chief raw material, during the first quarter period with much loss of iron in this imported article, there was no production of transformers and electric motors. During the second quarter of the year, however, comparatively large shipments of silicon steel plate arrived though falling under its planned

quantity. But the production of electric motor was stopped due to the trouble with the power press purch, and a new goal was set up to produce more transformers. As no electric copper arrived, they tried to make electric wires with the solution of scrap copper, but the supply of the first and second wires of transformers was delayed, they failed to accomplish their monthly plan.

b. Oil Breaker

The original plan was an average output of 100 per month. There was some stock of phosphor]bronze plate, but since no copper bars and wires arrived they had to stop production of oil breakers.

c. Resistor

The original plan was an average output of 80 per month. But the production of transformers, electric motor cases, other machine repairs, and castings was more urgently needed, so they produced no resistor,

d. Switches

Due to short capacity of marble cutters, the accomplishment of the original production plan was infeasible. But the production was continued as the finished articles were turned out with the already cut materials.

e. Uncoated copper Wire and Two Section Electric Wire.

Due to interrupted arrival of electric copper, no continual operation of copper rolling was possible. An attempt was made to promote wire production with collected scrap copper. But due to bad quality of copper, more than 15 percent of the rolled copper was condemned as bad products.

The two section electric wire was produced while the wires for transformer and electric motor were being reproduced, but due to lack of uncoated copper wire

this production was very much limited.

f. Other Products

To produce four section wire and stranded cable, they created a new device and produced some experimental samples of these articles during June.

2. Future Plan

With the readjustment of the evacuated machines, more iron nails, kettles, and farm implements will be produced. At the same time, the already produced electric motors and transformers will be repaired.

(Production Division)

Survey of Actual Production (13 November 1950)

Articles	Standard Specification	Unit	Production in 1st Quarter Year	Production in 2nd Quarter Year	Average Monthly Production	Remarks
1. Electric Motor	5 HP		4	109	18.5	
2. "	10 HP		24	165	31.5	
3. "	20 HP		-	7	1.17	
4. "	30 HP		-	-	-	
5. "	50 HP		-	-	-	
6. Transformer	5 KVA		-	119	19.8	
7. "	10 "		-	166	27.7	
8. "	20 "		42	184	37.7	
9. "	30 "		11	129	23.0	
10. "	50 "		-	47	8	
11. Transformer for meter	22 KV		-	-	-	
12. "	3.3.KV		108	-	19.7	
XXXXXX	40 VA					
13. Welder	200V 200A		151	61	35.3	
14. Oil Cutter	3.3 KV 200A		-	--	-	
15. "	3.3KV 400A		-	-	-	
16. Resistor	20 HP		-	-	-	
17. "	30 HP		-	19	3.1	
18. "	50 HP		-	48	8	
19. Copper Plate	3-m/m	⌘	-	-	-	
20. Electric-motor shaft		"	28.7	23.4	8.7	
21. Transformer Box		"	73.5	86.7	26.7	
22. Micanite			10.288	12.309	3.766	
23. Empire cloth		m	3.3408	5.0896	1.485	
24. Varnish	Black	⌘	-	--	-	
25. "	Raddish-Yellow	"	2.0	11.0	2.17	
26. Uncoated Copper wire	1 m/m	"	0.2	1.4	0.283	
27. "	1.2 m/m	"	-	0.3	0.05	
28. "	1.35 m/m	"	1.1	3.1	0.7	
29. "	1.6 m/m	"	5.4	1.8	1.2	
30. "	1.8 m/m	"	6.0	3.7	1.11	

Articles	Standard Specifi- cation	Unit	Production in 1st Qu- arter Year	Production in 2nd Qu- arter Year	Average Monthly Production	Remarks
31. Uncoated Copper wire	20 m/m	£	3.5	10.7	2.37	
32. "	2.3 m/m	"	2.6	11.3	2.31	
33. "	2.6 m/m	"	25.1	57.1	13.7	
34. "	2.9 m/m	"	-	-	-	
35. "	3.2 m/m	"	39.7	64.1	17.3	
36. "	4.0 m/m	"	9.7	28.1	6.3	
37. "	5.0 m/m	"	69.4	34.5	17.3	

No. Articles	Standard specifi- cation	Unit	1st Qu- arter Year	2nd Quarter Year	Average Monthly Production	Remarks
38. Uncoated copper wire	Square wire	£	16.6	11.2	4.63	
39. "	7/2.6 m/m	"	16.4	31.2	7.96	
40. "	7/2.0 m/m	"	-	5.9	0.98	
41. Double cot- ton covered wire	1.0 m/m	"	0.3	1.2	0.25	
42. "	1.35 m/m	"	0.4	2.5	0.48	
43. "	1.6 m/m	"	2.8	0.9	0.62	
44. "	1.8 m/m	"	3.0	2.3	0.88	
45. "	2.0 m/m	"	-	-	-	
46. "	2.3 m/m	"	2.3	5.4	1.3	
47. "	2.6 m/m	"	0.1	0.9	0.17	
48. "	2.9 "	"	-	-	-	
49. "	Square	"	10.6	11.4	3.7	
50. "	1.4 m/m	"	0.4	0.3	0.117	
51. Uncoated cop- per wire	6 m/m	"	16.6	-	3.77	
52. Two Section Wire	1.6 m/m	"	1.1	-	0.183	
53. "	1.8 m/m	"	-	-	-	
54. "	2.0 m/m	"	0.6	7.5	1.35	
55. "	2.6 m/m	"	4.6	10.8	2.57	
56. "	3.2 m/m	"	33.6	-	5.6	
57. "	4.0 m/m	"	2.9	8.1	1.5	
58. "	5 m/m	"	48.9	20.8	11.62	
59. "	7/2.6 m/m	"	-	-	-	
60. Four Section wire	2.6 m/m	"	-	13.9	.232	
61. "	7/2.0 m/m	"	-	-	-	
62. Steel Bar	19 m/m	"	146.7	382.3	88.07	
63. "	22 m/m	"	25	-	4.17	
64. "	25 "	"	61.8	394.3	76.02	
65. Bipolar Switch	5.0 A	"	1.860	3.479	89.0	
66. "	100A	"	1.833	1.887	620	
67. The Pole Switch	50A	"	1.078	1.411	415	
68. "	100A	"	48	164	35	
69. "	200A	"	-	-	-	
70. Plate Fuse	20A	"	368.000	64.000	12.000	
71. "	50A	"	164.000	317.000	93.500	
72. "	100A	"	87.200	-	14.530	
73. "	200A	"	185.200	-	30.870	
74. Thread Fuse	3A	Reel	-	-	-	
75. "	5A	"	-	131	21.8	
76. "	10A	"	-	-	-	
77. "	15A	"	20	-	3.33	
78. "	20A	"	"	-	-	
79. "Bisu"			212.015	78.855	48.480	
80. Marble			3.755	6.452	1.701	
81. Copper plate	03-0.5 m/m	£	0.6	-	0.1	

<u>No. Articles</u>	<u>Standard Specifi- cation</u>	<u>Unit</u>	<u>1st Qu- arter Year</u>	<u>2nd Quarter Year</u>	<u>Average Monthly Production</u>	<u>Remarks</u>
82.	Copper Plate 0.5 m/m	\$	20.9	-	3.5	
83.	Uncoated Copper wire 1.5 m/m	"	16.6	-	2.77	
84.	Disconnect- ing Switch		1,013	69	180	
85.	Four Section Wire 1.6m/m	"	-	0.1	0.017	
86.	" 2.0 m/m	"	-	3.2	0.53	
87.	Uncoated Electric Wire 1.4 m/m	"	-	1.7	0.28	
88.	Double Cotton Covered Wire 1.2 m/m	"	-	0.1	0.117	

Post Bill

Chairman (CHO Tae-kwan)
Vice Chairman (PAK Sil-t'aek)
Private Secretary (KIM Chae-sin)

(1) Executive Division (Director)

Personnel Section (PAK Hong-kyu, Chief; 3 clerks.)
Housing Section (YI Wŏn-pae, chief; 3 clerks, 5 carpenters,
5 laborers)
General Affairs Section (YANG Btŏng-ch'il, chief; 3 clerks,
15 laborers, 8 cooks).
Business Section (O Chun-kwŏn, chief; 3 clerks, 5 porters,
8 laborers)
Traffic Section (YI Tae-hwa, chief; 15 clerks, 10 laborers,
25 carpenters, 15 truck drivers)
Inspection Section (AN Nam-un, chief; 15 inspectors, 2 outside clerks.)
Technical Adviser (KIM Tu-hyŏn)
Guards (KIM Pong-nyong, chief guard; 25 first squadmen,
25 second squadmen)

(2) Financial Division (Director)

Supply Section (CHA Pong-si, chief; 5 horse-cart
drivers, 35 laborers, 5 clerks).
Account Section (YI Pong-ki, Chief; 5 clerks)
Food Section (CHOE Ch'an-pin, chief; 2 laborers, 2 clerks).

(3) Production Division (KIM Yong-nyong, Director)

Clerk - CHA Chông-hak

Casting Section (YI Ho-p'al, chief, 2 clerks 7 wooden moulders,
8 laboers, 23 castmen, 26 melters)Power Section (CHONG So-pong, chief, 2 clerks, 12 switchmen,
9 weak electricians, 23 outside wiremen,
26 inside wiremen, add 5 laboers)Wiring Section (KIM Myông-su, chief, 23 wiremen, 2 clerks,
20 rubber and clothingmen, 26 laboers)Electric Machine Section (CHOE Chun-ok, chief, 2 clerks,
25 assemblers, 6 laboers, 25 outside
electric mechanics, 15 cutters.)Engineering Section (CHOE Châng-ho, chief), 15 cannors,
21 iron smiths, 2 clerks, 18 outside boilermen
16 civil engineering workers, 7 laboers)Building and Repair Section (KO Tôk-yông, chief, 2 clerks,
25 lathemen, 15 cannors, 23 outside finishers,
17 ironsmiths, 12 laborers.

Planning Division (YI Pok-yông, employee)

Technical Division (PYON Su-sông, employee)

Processing Division (KIM Hyông-ok, employee)

Personnel Statistics by Skill

<u>Post</u>	<u>Technicians</u>	<u>Skill-brain Workers</u>	<u>laborers</u>	<u>Office Worker</u>	<u>Total</u>
Executive Division		71	42	20	135
Financial Division			46	14	60
Production Division	5	443	76	15	539
Inspection Division		15		2	17
Guards			50	1	51
Total	5	529	214	54	802

(11)

Actual Conditions

of

The Pyŏngyang Electric Bulb Factory

14 November 1950

Operation Condition (Prior to 25 June 1950)

National Electric Bulb Factory, Pyöngyang

The National Electric Bulb Factory (under the management of Power Control Bureau, Ministry of Industry) commenced operation on 1 September 1947, and produced about 500 electric bulbs of the Japanese type. Glass bulbs, and glass tubes were also made here by using home materials, while filaments, inducing wires, and other important materials were imported chiefly from South Korea, and were finished by hand.

Due to shortage of exhaust machines, the expansion of this factory was found impossible. There were only 80 employees in the various workshops. In November 1948, the factory moved to a new and larger building where more exhaust machines and hand-control sealing machines were installed. By this time, the number of employees increased to about 300 people.

The fund was operated successfully on the basis of independent accounting system.

Filaments were too scarce to accomplish the planned production, and other attended materials such as phosphoric anhydride, and exhaust rubber were obtained from South Korea through the channel of private traders.

In the technical field, there were only a few skilled workers, and no standard production was guaranteed.

By separate contracts, the factory products were supplied to all plants, mines, consumers' cooperatives, and national commercial organs in North Korea.

The annual production for 1949 was estimated at double amount over previous years or an average daily output for 3,000 electric bulbs. Accordingly a plan was made to mechanize all production process. But contrary to expectation, no automatic manufacturing machines arrived from Dairen, obliging more hand control operation, including the production of tube sealing and opening machines.

Technical education was enforced in order to train skilled workers. The employees got an average monthly salary for 1 1,000 Wŏn, which could hardly procure the bare necessities of their daily life. Ration was rarely given at times when it might serve a propaganda purpose.

On the other hand, severe laws were enforced, finding laborers with unseen chains and depriving them of all freedoms. Unless a party member, every laborer had to comfort himself as rising in the world when he was picked up to attend lectures at a culture propaganda hall.

In March 1949, steam power was replaced by coal and gas in producing stems and seals of electric bulbs, abolishing the complicated fuels such as oxygen, gasoline, and alcohol.

By a government order of 1 December 1948, the Pyŏngyang Electric Machine Shop was closed and all its electric machines, tools, and parts, power press, lathes, bolbans, together with 300 employees were transferred to the new factory where they started production of electric tools and machines, including safety switches, sockets, sealings, consets, attachings, plugs, and gas, etc.

By this time, the factory building was enlarged with the erection of a two-storeyed annex of 100 pyŏng, and a repair shop of 40 pyŏng, in floor areas, in addition to five employees' homes for 80 families. The construction work was completed by the end of 1949, and 700 employees were accommodated in appropriate quarters. However, they experienced great difficulties due to lack of raw materials such as bituminous coal, 'compound', copper plate, and standardized tools. Among other things, no 'compound' was allocated for this factory.

So they made half-finished ceramic articles at the Chuŭl Ceramic Factory, and had them finished for substitute use. But when assembled, they were in bad shape, being out of the standard size.

Partly for bad living conditions of employees, and partly through suppression, about 40 percent of the employees were shaken up, and by expending 3,500,000 Wŏn (debt of the control Bureau), they turned out 700,000 Wŏn worth of finished electric bulbs. Then, from 1950, they put more every into the output of gas-filled electric bulbs, and produced high candle-power bulbs of 100 watts. But due to lack of inducing wires and technology, no normal output was possible, and the 200 watt bulb was only a sample product.

By and by, filaments and inducing wires were imported from the Soviet Union, while a geological survey was conducted in Pyŏnchŏlli, and a plan was drawn to enlarge the factory, but without any actual result.

The life of electric bulbs, made in this factory, lasted only 1,200 hours. The percentages of inferiority were: 40 percent in glass tubes; 20 percent in electric bulbs; 10 percent in other products.

They also drew up a plan to produce exhaust machines, but failed in the actual production, and were obliged to use the existing machines with repairs, while they drew supplies of exhaust rubbers from the Pyŏngyang Special Rubber Factory; other materials through traders; bituminous coal from the Sinyusŏn Coal Mine up to 300 tons per month, and Manchurian coal via the Kyŏmipŏ Iron Mill up to 500 tons per month; copper plates from the Sŏngjin Steel Mill up to 20 tons per month. These copper plates were reshipped to the Kangsŏ Electric Machine Shop, where they were rolled by 0.3 percent to 0.5 percent, while rolling some of these plates with their own rollers.

During the year under review, they began to produce indoor lamps, which were coarse and superfluous. Moreover, due to superabundant staff, and waste of supplies and other expenses the price exceeded the production cost. Thus a finished electric bulb was selling at 60 Wŏn for 700 watts; 50 Wŏn for 60 watts; 40 Wŏn for 40 watts. At the same time, due to bad transportation, the supply of coal was insufficient, which resulted in the delayed supply of all important materials.

In the field of fund, the price of merchandise, sold by contract, amounting to 7,000,000 Wŏn, was uncollected at consumers' cooperatives and commerce control bureaux. Thus the bank debt was added up to 5,000,000 Wŏn.

No fund was loaned by the Government, the debts, including those borrowed from the control Bureau and from others appeared to have exceeded claims. But due to lack of vouchers, no accurate figures are available.

The production plan for May was: 15,000 electric bulbs; 5,000 mine lamps; 32,000 cubic meters of gas; 3,600 tumbler switches; 2,500 attaching plugs; 250,000 electric bulb sockets; 20,000 table lamps.

Then the production plan for June was: 300,000 electric bulbs; 8,000 mine lamps; 60,000 cubic meters of gas; 9,000 sockets; 3,000 receiving sets; 4,000 tumbler switches; 1,000 attaching plugs; 360,000 electric bulb sockets; 11,000 indoor lamps. But the actual production was only about 40 percent of these plans.

The above is a brief report of business operation prior to June.

(Equipment) Business Report of Electric Bulb Factory

Articles	Type	Unit	Quantity	Remarks
Lathe	Using English 11 foot belt		1	Now usable Building & Repairshop
"	" 8 "		1	" "
"	" 6 "		1	" "
Bolban	12inch belt		1	" "
Shaver	22 inch belt		1	" "
Machine Saw	10 " 20 HP		1	" "
Electric Motor	To run machinery 5 HP		1	" "
"	for grainding (223 ft)		1	" "
Lock Plate	for finishing (5m)		1	" "
Universal Power				
Machine	for finishing		3	" "
Blower	for casting		1	" "
Transmitter	for blacksmith		1	" "
Loading Press	Made in Korea		2	" Metal Plate shop
Machine Apron	"		2	" "
Bar Press	"		3	" "
Power Press	"		3	" "
"Balc'hagi"	"		6	" "
Hand Press	"		1	" "
"Exing" Press	" 7.5 HP		9	" "
Electric Motor	for running press 20 HP		1	" "
"	for running rollers		1	" "
Roller	16 inches		1	" "
Cutter			1	" "
Universal Power				
Machine	5		1	" "
Air Pump			2	Unusable Electric work-shop
"Kwaksan" Pump			1	Unusable "
Sealing Machine	Hand control		14	Out of 14 Machines " 4 need repair
Automatic Sealing				
Machine			1	Unusable "
Automatic Stem				
Machine			1	" "
Air Heater			15	Usable "
Pipe Openig Machine			3	Unusable need repair
Stem Heater			22	Unusable
Electric Bulb				
Text Stand			1	Unusable (broken)

Stores

Articles	Unit	Quantity	Remarks
Soda ash	kg	10	as of 7 November 1950
Copper Plate	"	2.5	"
Crucible		35	"
Saltpeter	"	1	"
Borax	"	1	"
Antimony	"	1.5	"
Lead	"	1	"
Sodium Arsenite	K	100	"
Red Lead Oxide	"	200	"
Tumbler	"	1,500	"
Safety Switch		400	"
Lamp	set	1,000	"
Button	box	20	containing 5,000 buttons in each box
Motor		8	
Oil	drum	7	No separate figures for each kind of oil are available

Furniture

<u>Articles</u>	<u>Standard Specification</u>	<u>Unit</u>	<u>Quantity</u>	<u>Remarks</u>
Table	for office use		8	Usable
Chair	revolving		8	"
Safe	large and small		2	Unusable (broken)
Stove			5	Usable

Buildings

<u>Kind</u>	<u>Floor Area</u>	<u>Structure</u>	<u>Use</u>	<u>Remarks</u>
Main Office rooms of each workshop	pyöng 300	Tileroof, cement & brick, too storèed	Usable	Office rooms, metal plate workshop, electric bulb workshop, Windows & all need repair.
Repair Workshop	50	" one storied	"	"
Glass Workshop	186	"	"	"
(1) Warehouse	100	" two storied	"	"
(2) Dormitory	120	" one storied	Unusable	Windows, ceiling & hotfloor, need repair
Dormitory & Warehouse	120	" "	usable	
Bathroom	20	" "	"	
Guardroom	10	"	"	
Gas generating factory	60	Tile roof, red brick, unusable two storied		
Employees' Homes	100 buildings			Including usable & Unusable houses.

Actual Production

<u>Articles</u>	<u>Standard Specification</u>	<u>Daily production</u>	<u>Remarks</u>
Electric Bulb	40W 60W 100W 80W 20W	3,000 pc's	Pre-War Production
Safety Bulb		100	"
Socket		60	"
Tumber switch		85	"
Carbon lever		4	"
Hanger		40	"
Ketch		20	"
Table Lamp		130 Sets	"
Hanging Lamp		50 "	"

Five Year Plan of Manchuria (1942)

1.	Dairen	154,000 KW
2.	Yingkow (Newchang)	6,800
3.	Antung	16,000
4.	Hsinking (Changchun)	49,250
5.	Harbin	38,000
6.	Chincow	1,000
7.	Peili	15,000
8.	Fuhsin	160,000
9.	Yŏnhŏ	106,000
10.	Fushun	270,000
11.	Anshan	123,500
12.	Penhsihu	9,700
13.	Amnokkang (The Walu)	260,000
14.	Sungari	420,000
15.	Chingpeihiu	30,000
16.	Other	188,755

Total 1,987,505

q Steam Power 1,177,505
Water Power 810,000

Electric Boilers (February 1950)

1.	Hungnam Fertilizer Factory	30,000 KW
2.	Pongung Chemical Factory	30,000
3.	Hungnam Gunpowder Factory	15,000
4.	Hungnam Refinery	5,000
5.	Chŏngsu Chemical Factory	4,000
6.	Sŏngjin Steel Mill Factory	4,000
7.	Kilchu Paper Mill	8,000
8.	Hungnam Laboratory	3,000

Total 99,000

Remarks: Due to breakdown of Coal Boiler at the Aoji

Synthetic Oil Factory, 15,000 KW. was temporarily
used.

Variation of Demand

<u>Year/Kind</u>		<u>Electric Lamp</u>	<u>Electric Power</u>	<u>Electric Heat</u>
1956	Houses	415,648	6,658	7,350
(End of September	Quantity	1,275,572	542,230	13,731
1946	Houses	503,612	7,144	15,367
(End of December)	Quantity	1,247,240	628,052	21,642
1947	Houses	533,862	9,894	23,937
(End of December)	Quantity	1,260,108	714,886	37,654
1948	Houses	650,693	10,576	11,635
(End of December)	Quantity	1,467,101	798,265	10,387
1949	Houses	660,000	11,000	10,000
(End of December)	Quantity	1,520,000	871,928	9,700
1950	Houses	680,000	10,696	5,000
(August)	Quantity	1,520,000	850,000	5,600 KW

Possible Generation of Electricity and Estimated Burden
during Dry Season in 1950

1. Reservoir Water available as of 15 January

<u>Reservoir</u>	<u>Waterlevel at Reservoir</u>	<u>Reservoir water available</u>	<u>Reservoir water available</u>	<u>Percentage of 1950 against 1949</u>
	^m	^{106m3}	^{106m2}	
Supung	111,720	4,009	3,680.6	109
Changjingang	10,940	236.7	202.3	117
Puchongang	10,925	91.2	124.5	73
Hochongang	10,560	188.8	177.2	107
Total	-	4,525.7	4,184.6	108

Remarks: The above figures were adapted from the "Electric
Supply Daily", Power Control Bureau.

2. Estimated Flow

<u>Month</u>	<u>Supung</u>	<u>Changjingang</u>	<u>Puchongang</u>	<u>Hochongang</u>
January	103.2 M3/sec.	4.9	2.1	5.6
February	71.7	3.6	1.5	4.9
March	292.9	6.4	2.8	7.2
Total	467.8	14.9	6.4	17.7
Aggregate flow	106m3	106m3	106m3	106m3
against above total	1212.5	38.7	16.6	45.8
65percent of normal year	788.1	25.1	10.8	29.8
Minimum flow	-	12.7	7.5	12.2
average flow in 1948 & 1949	492.0	39.7	15.5	22.6

Remarks: The above figures show average yearly flows
from 1925 to 1949.

3. Possible power generation by the above flow.

- (1) When the flow from 15 January to 15 April is considered as 65 percent of a normal year.

<u>Particulars</u>	<u>Supung</u>	<u>Changjingang</u>	<u>Puchongang</u>	<u>Hochongang</u>
Reservoir water as of 15 Jan.	106m3 4009	236.7	91.2	188.8
Flow from 15 Jan. to 15 Apr. (65 percent of normal year)	788.1	25.1	10.8	29.8
Possibly freezing water	65.0	13.7	6.0	6.3
Possible power generating water (up to 15 Apr.)	4,741.1	248.1	96.0	212.3
Effective Head	77m	920	1037	933
Efficiency	80 percent	83	80	85
Possible average generation of power	367,000 KW	239,000	99,000	212,000

- Remarks: (1) Considering only two generators working at Supung (60-system) the generated power would be 160,000 KW.
- (2) Considering generated power as 18,000 KW. in Kangwŏn-do and 3,000 KW. in Puryŏng, the possible average generation of power between 15 January and 15 April would be 731,000 KW.

- (II) Possible Power Generation when the flow between 15 January and 15 April is considered as equal to the average flow 1948 and 1949.

<u>Particulars</u>	<u>Supung</u>	<u>Changjingang</u>	<u>Puchongang</u>	<u>Hochongang</u>
Reservoir water as of 15 Jan.	106m3 4009	236.7	91.2	188.8
Flow between 15 Jan. & 15 April is equal to average flow of 1948 & 1949	942	39.7	15.5	22.6
Possibly freezing water	56	13.7	6.0	6.3
Possible power generating water	4895	262.7	100.7	205.1
Effective Head	77m	920	1027	933
Efficiency	80 percent	83	80	85 percent
Possible average generation (of power) between 15 January & 15 April	380,000	253,000	104,000	205,000

- Supung (60 - system) 160,000 KW
 - Kangwŏn-do and Puryŏng System 21,000 KW
- Total possible generation (average) 743,000 KW

(III) Possible power generation when the flow between 15 January and 15 April is considered as equal to the average flow of 1925 - 1949.

Particulars	Supung	Changjingang	Puchöngang	Höchöngang
Reservoir water as of 15 Jan.	106m ³ 4009		81.2	188.8
Flow between 15 Jan. and 15 April	1212	236.7 38.7	16.6	45.8
Possible power generating water up to 15 Apr.	5212	275.4	107.8	234.6
Effective Head	77m	920	1627	933
Efficiency	80 percent	83	80	85
Possible average generation (of power)	407,000	266,000	111,000	234,000

- Supung (60-system) 160,000 KW
 - Kangwön-do and Puryöng System 21,000 KW
- Total possible generation (average) 792,000 KW.

4. Comparison of necessary water for power plants with actual flow after 15 April

Power Plants	Necessary water on basis of estimated furden for Apr. & May	65 per. normal year		Actual average flow (1925-1949)	
		Flow in April	Flow in May	April	May
	100 m ³ /Sec.	93	103	143	159
Supung	562	523	580	804.4	894.9
Changjingang	100 290	64 18.5	73 21.3	97 28.2	113 32.8
Puchöngang	100 11.9	65 7.8	70 8.4	100 11.9	108 12.9
Höchöngang	100 23.5	71 16.6	69 16.3	108 25.5	107 25.1
Total	100 626.4	90 565.9	100 626.0	138 870.0	107 965.7

(1), The necessary water shows the total average generating power.

(2) The flow in April and May is considered as 65 percent of the average actual flow.

5. Necessary power on the basis of Section 4 (above) and possible generation of power after April.

Power Plants	Necessary power on basis of estimated burden for April	When flow is 65 per. On basis of actual of normal year flow (1925-1949)			
		Pos. Gen. in Apr.	Pos. Gen. in May	Pos. Gen. in April	Pos. Gen. in May
Suplung	160,000 KW	160,000	160,000	160,000	160,000
Changjingang	218,000	140,000	159,000	212,000	246,000
Puchöngang	96,000	63,000	67,000	96,000	104,000
Höchöngang	183,000	130,000	126,000	198,000	196,000
Kangwön	18,000	18,000	18,000	18,000	18,000
Puryöng	3,000	3,000	3,000	3,000	3,000
Total	678,000	514,000	533,000	687,000	727,000
Generating power on basis of thawing reservior water -		50,000	-	50,000	-
Spare power during three months (15 January-15 April)		40,000	40,000		
Grand Total	678,000	604,000	573,000	737,000	727,000

6. When the flow in April and May is considered as equal to the average flow of two years (1948 - 1949)

Reservoir	Nec. wat. on basis of estimate for April and May		Flow in April		Flow in May	
Suplung	Suplung	100 m3/sec.	105 m3/sec.		187 m3/sec.	
		562	590		1051.5	
Changjingang	100	29	83	240	78	22.5
Puchöngang	100	10.9	77	9.1	70	8.3
Höchöngang	100	23.5	92	21.5	112	26.4
Total	100	626.4	103	644.9	177	1108.7

Remarks: The necessary water shows the volume of the estimated generating burden for 675,000 KW.

7. The necessary power on basis of Section 6 and
The possible generation of power after April

<u>Power Plant</u>	<u>Necessary power generation on basis of estimated burden for April & May</u>	<u>Possible power generation in April</u>	<u>Possible power generation in May</u>	<u>Remarks</u>
Supung	160,000 KW	160,000	160,000	
Changjingang	218,000	181,000	170,000	
Puchongang	96,000	74,000	67,000	
Hochongang	183,000	168,000	205,000	
Kangwon	18,000	18,000	18,000	
Puryong	3,000	3,000	3,000	
Total	678,000	604,000	623,000	
Generating power of thawing reser- voir water		50,000	-	
Spare power during three months (15 Jan. @ 15 April)		20,000	50,000	
Grand Total	678,000	674,000	673,000	

8. Estimated Burden

<u>Particular</u>	<u>Actual results of previous year (average of Nov- ember & December</u>	<u>Average power of three months (15 January- 15 April</u>	<u>Average power of half month (15-30 April)</u>	<u>Average power in May</u>	
Actual results of 1949	100 KW 640,000	101 648,500	94 600,000	90	577,000
Estimated results of 1950	715,000	711,000	670,000		680,000

9. Conclusion

- (I) Considering the average flow of four and half
Months (15 January - 31 May) as 65 percent of
normal year

<u>Particulars</u>	<u>15 January 15 April</u>	<u>16 April - 30 April</u>	<u>May</u>
Possible power generation	KW 711,000	KW 604,000	kw 573,000
Estimated burden	711,000	670,000	650,000
Shortage of power	-	66,000	77,000

II) Considering the average flow of four and half months
(15 January - 31 May) as equal to the average flow
of two years (1948 - 1949)

<u>Particulars</u>	<u>15 January-15 April</u>	<u>16-30 April</u>	<u>May</u>
Possible generation of power	KW 743,000	KW 737,000	KW 727,000
Estimated burden	711,000	670,000	650,000
Spare power	30,000	67,000	77,000

Remarks: The spare power of the Kangwŏn-do system
was not considered.

III) Considering the flow of three months (15 January -
15 April) as 65 percent of normal year, and the flow
of one and half months (16 April - 30 May) as equal
to the actual average results of two years (1948-1949)

<u>Particulars</u>	<u>15 January-15 April</u>	<u>16-30 April</u>	<u>1-30 May</u>
Possible generation of power	KW 711,000	KW 674,000	KW 673,000
Estimated burden	711,000	670,000	650,000
Spare power	-	4,000	23,000

Remarks: The spare power of the Kangwŏn-do system
was not considered.

Volume of Flow by Reservoirs unit M3/sec.

<u>Reservoir</u> <u>Month</u>	<u>Jan.</u>	<u>Feb.</u>	<u>Apr.</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Tot</u>
Changjingang	4.9	3.6	6.4	28.2	32.8	34.2	75.0	97.5	21.1	12.7	7.6	368
Puchŏngang	2.1	1.5	2.8	11.9	12.9	16.1	30.7	40.3	21.4	10.1		

Volume of Flow by Reservoirs unit m3/sec.

Reservoir/Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Average
Changjingang	4.9	3.6	6.4	28.2	34.2	34.2	75.0	97.5	42.4	21.1	12.7	7.6	366.1	(1925-1949) 30.5
Puchongang	2.1	1.5	2.8	11.9	12.9	16.1	30.7	40.3	21.4	10.1	6.2	3.3	159.3	(1927-1949) 13.3
Sachbpyong	1.1	1.2	1.4	4.4	4.1	6.7	12.2	14.6	11.8	4.1	2.7	1.5	65.8	(1925-1949) 5.5
Naejungni	0.8	0.5	0.8	3.0	2.8	4.2	8.9	10.8	6.7	3.0	1.7	0.9	44.1	3.7
Hwangsuwon	1.3	1.0	1.7	5.8	5.9	8.8	18.3	24.2	15.7	6.3	3.8	2.1	94.9	7.8
Hwangtupyong	2.4	2.2	3.3	12.3	12.3	20.5	31.4	46.1	24.5	11.6	7.4	3.3	177.3	14.8
Total	5.6	4.9	7.2	25.5	25.1	40.2	70.9	95.7	58.7	25.0	15.6	7.8	382.1	31.8
Supung	103.2	71.7	292.9	804.4	894.9	953.5	2185.3	2227.7	890.8	424.5	315.9	126.1	9290.9	774.3

Consumption of Electric Power by Industries

(1st quarter)

Industries	1946	1947	1948	1949	1950
Metal	115,245,331	370,101,611	1,256,192,388	366,654,736	105,373,875
Machine	3,531,227	20,417,381	27,459,922	54,162,955	18,409,030
Mining	33,718,375	118,361,595	168,476,606	158,566,605	48,066,728
Coal	35,784,792	51,262,663	60,900,061	71,923,960	19,741,461
Chemistry	1,832,325,266	2,675,105,356	2,280,392,938	3,226,716,634	928,396,902
Building Material	25,738,082	50,421,407	78,822,694	92,117,966	23,503,084
Light Industry	56,323,136	125,786,106	160,317,519	173,132,999	57,415,954
Electricity	38,455	1,678,645	3,077,557	6,190,262	1,879,583
Vehicle	1,928,336	3,738,785	5,080,451	6,103,908	2,706,577
Civil Engineering	2,566,020	2,586,976	6,511,341	8,964,354	4,047,572
Water Pumping	9,274,324	17,951,587	32,657,697	49,420,717	3,412,387
Monopoly	1,779,737	18,531,217	33,338,354	19,639,662	333,613
Public Utilities	25,782,557	33,167,370	46,081,446	58,354,034	15,588,326
Other	5,531,489	26,143,141	55,146,634	32,237,719	13,888,458
Total	2,249,742,396	93,615,394,820	4,238,956,608	4,325,186,511	1,243,574,050
China	510,985,742	389,455,824	545,333,361	595,467,526	220,112,441
South Korea	461,739,893	577,197,464	203,187,342		
Electric Lighting	86,844,016	103,291,033	134,970,071	226,859,305	71,439,367
Electric Heating (fixed amount)	1,743,762	7,214,936	10,019,020	4,419,352	673,398
Undertakings	625,895,817	55,714,765	115,713,019	187,479,236	27,833,837
Loss	568,855,205	848,529,865	882,648,329	675,870,919	201,463,707
Total	1,693,064,435	1,981,403,897	1,891,871,144	1,599,934,529	521,522,750
Grand Total	3,942,806,831	5,596,798,716	6,130,827,752	5,924,121,340	1,765,096,800

Cost of Power for Electro-chemical products

1. Fertilizers

<u>Kind</u>	<u>Prior to Liberation (15 August 1945)</u>	<u>Existing Rates</u>
Wattage - per \$ production of ammonium sulphate	3,200 KWH	3,200 ^{KWH}
Power cost " "	32 Wđn	112 Wđn
Selling price - per \$ ammonium sulphate	104 80	3,588 80
Power cost versus selling price (percent)	30.6	3.12
Power rates per KWH	1 Chđn (100/1 Wđn)	3.5 Chđn

2. Carbide

<u>Kind</u>	<u>Prior to Liber- ation (15 Aug 45)</u>	<u>Existing Rates</u>	<u>Remarks</u>
Wattage per \$ production of carbide	3,000 KWH	3,000 ^{KWH}	
Power cost " "	30Wđn	111,60Wđn	
Selling price per \$ carbide	204.75 Wđn	4,212.45 Wđn	
Power cost versus selling price (percent)	12.4 percent	2.65 percent	
Power rates per KWH (average)	1 Chđn (100/1 Wđn)	2.93 Chđn	

3. Sodium Hydroxide

<u>Kind</u>	<u>Prior to Liber- ation (15 Aug. 45)</u>	<u>Existing Rates</u>	<u>Remarks</u>
Wattage per \$ production of Sodium hydroxide	4,000 ^{KWH}	4,000 ^{KWH}	
Power cost " "	40 Wđn	144.80 Wđn	
Selling price per \$ sodium hydroxide	275,57 Wđn	18,342.00 Wđn	
Power cost versus selling price (percent)	14.5 percent	0.79 percent	
Power rates per 1 KWH (average)	1 Chđn (100/1 Wđn)	3.62 Chđn	

Outline of Electrical Industry in North Korea at the
time of Liberation (15 August 1945)

1. The Korean Power Company, Ltd., (Chosŏn Chŏnŏp)

Capital (authorized)	341,730,000
Capital paidup	(unavailable)
Fixed Assets	850,840,000
Debt	624,514,000
Generating Equipment	948,000 KW
Service Line for Direct Supply	750,000 KW
Number of Employees	2,590

2. The Amnokkang Hydroelectric Company

Capital (authorized)	125,000,000
Capital paidup	75,000,000
Fixed Assets	202,780,000
Debt	137,000,000
Generating Equipment	700,000
Number of Employees	672

3. West Korea Consolidated Electric Co. Ltd.,
(Sŏsŏn Haptong Chŏngi)

Capital (authorized)	30,000,000
Capital paid up	4,900,000
Fixed Assets	30,381,000
Debt	12,950,000
Power Supplied	
Electric Lamps used	811,500 lamps
Electric Power used	167,500 KW
Electric Railroad	13 KW
Number of Employees	3,000

4. North Korea Consolidated Electric Co. Ltd.,
(Puksŏn Haptong Chŏngi)
- | | |
|----------------------|---------------|
| Capital (authorized) | 11,500,000 |
| Capital paid up | (unavailable) |
| Fixed Assets | 21,024,000 |
| Debt | 1,160,000 |
| Power Supplied | |
| Electric Lamps used | 557,300 lamps |
| Electric Power used | 103,200 KW. |
| Number of Employees | 1,090 |
5. The Seoul Electric Co. Ltd., (North of 38th Parallel)
(Kyŏngchŏn or Keiden)
- | | |
|--------------------------------------|--------------|
| Fixed Assets | 9,550,000 |
| Power Supplied | |
| Electric Lamps used | 59,300 lamps |
| Electric Power used | 8,600 KW |
| Extension of Electric Railroad Lines | 67.6 Km. |
| Number of Employees | 676 |
6. Total
- | | |
|-----------------------|-----------------|
| Fixed Assets | 779,185,000 |
| Generating Equipment | 1,648,000 KW |
| Power Supplied | |
| Electric Lamps used | 1,428,100 lamps |
| Electric Power used | 279,300 KW |
| Special Service Power | 750,000 KW |
| Number of Employees | 8,028 |

Comparison of Indices Showing Increase of Power Production

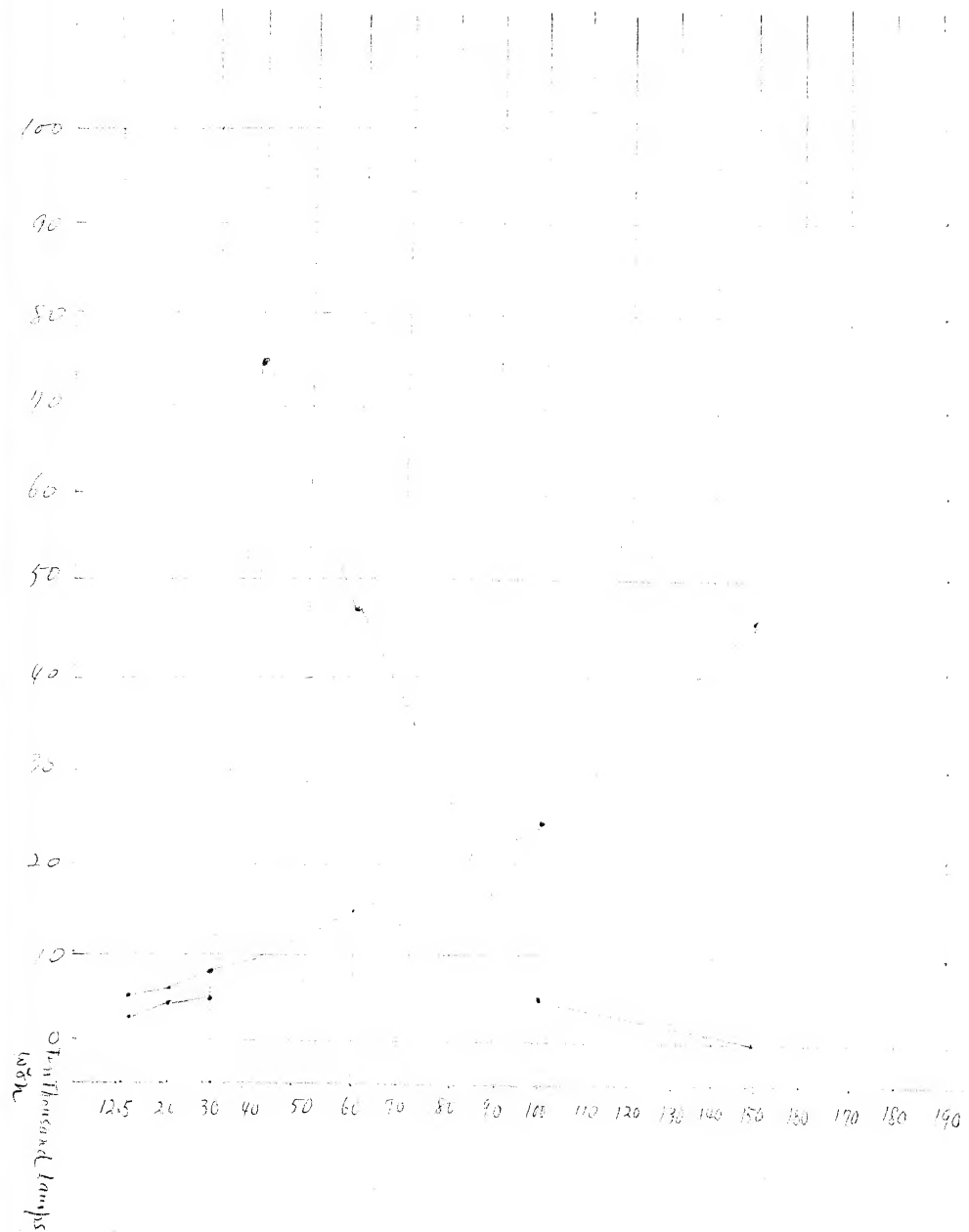
<u>No.</u>	<u>Factory</u>	<u>1946</u>	<u>1947</u>	<u>1948</u>	<u>1949</u>	<u>1950</u>
		HP Index				
		100	175	225	190	(187)
1.	Sŏngjin Steel Mill	Product. Index 100	200	336	350	
2.	Chŏngsu Chemistry	160 100	173 333	213 710	224 760	(225)
3.	Kangsŏn Steel Mill	100 100	251 290	590 615	870 750	(1030)
4.	Sunchŏn Chemistry	100 100	132 160	166 156	181 212	(180)
5.	Hwanghae Iron Mill	100 100	186 552	310 1380	328 1700	(326)
6.	Nampo Refinery	100 100	670 165	820 165	830 185	(820)
7.	Sudong Anthracite	100 100	110 110	115 144	108 143	
8.	Sŏnghŭng Mine	100 100	111 111	140 111	140 102	
9.	Suan Mine	100 100	195 152	310 176	223 148	
10.	Taeyudong Mine	100 100	130 162	138 415	162 505	
11.	Hŭngnyŏng Coal Mine	100 100	72 232	195 310	174 240	
12.	Sunghori Cement	100 100	108 254	200 376	154 535	
13.	Chŏnma Mine	100 100	300 305	385 343	319 200	
14.	Sinŭiju Paper Mill	100 100	376 220	245 240	248 338	
15.	Haeju Cement	100 100	260 675	280 325	243 1400	
16.	Madong Cement	100 100	250 270	300 355	363 600	

Enterprise	Productive						Non-Productive			Total	
	Basic Construction	Laborers	Skilled Workers	Engineers	Office Workers	Miscellaneous	Total	Apprentice	Household Workers		Driver
Shuping	Production	28	242	23	15	3	311	5	3	11	330
	Blanching	11	101	1	6	-	118	-	-	-	129
	Total	39	343	24	21	3	429	5	3	11	448
Huochenggang	Production	25	400	58	10	-	493	23	7	-	523
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	26	401	59	11	-	497	23	7	-	527
Changjiatang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Huochenggang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Kangyuan	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Huochenggang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Huochenggang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Huochenggang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Huochenggang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Huochenggang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Huochenggang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Huochenggang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Huochenggang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Huochenggang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8	-	-	-	8
Huochenggang	Production	1	1	1	1	-	4	-	-	-	4
	Blanching	1	1	1	1	-	4	-	-	-	4
	Total	2	2	2	2	-	8				

Herring	Head	21	192	15	92	275	12	5	17	287
	Body	5	30	2		37				37
	Total	26	222	17	92	312	12	5	17	324
Chingila	Head	38	278	12	100	428	21	5	35	492
	Body	17	119	1		120				121
	Total	55	397	13	100	548	21	5	35	613
Buckhorn	Head	1	12	1	12	26				26
	Body	1	5	1		6				6
	Total	2	17	2	12	32				32
Worm	Head	1		1		2				2
	Body	1		1		2				2
	Total	2		2		4				4
Total	Head	151	1012	30	192	1507	54	10	52	1613
	Body	24	134	4	100	162				166
	Total	175	1146	34	192	1669	54	10	52	1779
Trapp	Head	100	700	20	80	800				800
	Body	10	100	2	10	112				112
	Total	110	800	22	90	912				912
Shutear	Head	30	210	6	30	276				276
	Body	10	100	2	10	112				112
	Total	40	310	8	40	388				388
Hingia	Head	100	700	20	80	800				800
	Body	10	100	2	10	112				112
	Total	110	800	22	90	912				912
Electric	Head	200	1400	40	200	1600				1600
	Body	10	100	2	10	112				112
	Total	210	1500	42	210	1712				1712
Bull	Head	10	100	2	10	112				112
	Body	10	100	2	10	112				112
	Total	20	200	4	20	224				224
Total	Head	151	1012	30	192	1507	54	10	52	1613
	Body	24	134	4	100	162				166
	Total	175	1146	34	192	1669	54	10	52	1779
Grand Total	Head	3591	23812	520	512	25335	162	30	152	25639
	Body	3591	23812	520	512	25335	162	30	152	25639
	Total	7182	47624	1040	1024	50670	324	60	304	51278

Graph of Electric Light Rates (31 December 1949)

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Loss of Power at Dairen Transmission Line

722
143

1. Power Line 1. A.C.S.R 45 + 454 A / 3.08
R = 0.0 2165 R / 100m

2. Extension 342.4 Km

3. Charging Current 134 Amp Line

Formula used

$$P_L = 3 R_L (I^2 - I_0^2) \sin^2 \theta + \frac{1}{2} I_0^2 \sin^2 \theta$$

Power factor 70% Assumption Since = 42.6%

Distance Miles	Eff. 200 KW	CV hours	Ed = 18" KV	Loss KW
40	11,200	2.80	1,340	3.36
50	16,600	3.82	2,140	4.08
60	23,400	4.85	2,930	4.88
70	32,200	5.60	3,920	5.40

Charge drop 0.5%

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Electric Power in Demand

Products	Manufacture KWH	Remarks	Products	Manufacture KWH	Remarks
Carbide	3,000		Nitric acid by a.c. method	12,000	
Phosphor	10,000		Electric iron process	2,400	
Silicon iron	6,000		Manganese iron	4,000	
	10,000		Electric steel process	400	
Carbon graphite	8,000	2nd. and material - for graphite and graphite		2,000	
Aluminum	25,000			3,000	
	40,000	2nd. and material - aluminum		2,000	
	30,000	Standard products		4,000	
Magnesium	20,000			2,400	
Sodium fluoride	4,000			5,000	
Electric copper	5,000			20,000	
Monochloro sulfate	3,200			15,000	
Melting	15,000			8,000	
Carborundum	1,000			15,000	
Synthetic rubber	90,000				

145227

Comparison of Electrified Farm Implements and Human Labor

Implements.	Labor (man)	Motor (HP)	Comparison	Remarks
Rice Threshing	780 m ²	4,900 m ²	625%	
Rice Hulling	4 bags	40 bags	1000 "	
Pumping	60 '50K'	250 '50K'	400 "	
Rice cleaning	6 'm ²	1.5 '50K'	250 "	
Straw rope making	8 'man'	40 'man'	500 "	
Flour Milling	15 'm ²	5 'm ²	300 "	

Implements	Experimental Farm House	Net working time in day	Quantity of seed per day	Time necessary to do the work one '50K'	Power necessary to do the work one '50K'
Rice Threshing	14	5" 46'	5.5 '50K'	42 m.	0.41 KwH
Rice Hulling	16	2" 55'	4.8	34 m.	0.42
Rice cleaning	11	-	0.75		2.20
Flour Milling	3	-	0.66		7~11.2

8 November 1950

Conditions of Streetcar Business

Division of Duties (as of 25 June)

Manager

Chief Engineer

	Commodity Supply Section
	General Affairs Section
	Material Section
Transportation Division	Transportation Section Business Section
Financial Division	Accounting Section Budget Section Property Custody Section
	Overhauling Section
Engineering Division	Construction Section Track Section Rolling Stock Section Power Section
Labor Division	Wage Section Standard Quantity Section
Staff Division	Training Section Staff Section
Planning Division	Safety Engineer

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Transformer Substation

Items Substations	Location	Equipment capacity	Tools & Machinery	Drumage done	Engineers	Remarks
Kanghyon (Hannacho)	No. 18. Kanghyon	2000 KVA				Constructible - 1.8/8.
Muhungni	Muhungni	2000 KVA				Constructible - 1.8/8.
Pyongyang (Hannacho)	No. 12. Pyongyang	4000 KVA				

Substation Equipment

Locality	Substation	Capacity	Equipment	Remarks
Pyongyang	Pyongyang	3000	3000	3000
Pyongyang	Pyongyang	1500	1500	1500
Pyongyang	Pyongyang	4000	4000	4000

Survey of Electric Railroad Business 148 (as of 25 June)

Crossbar 12,094 m

Extension 18,032 m

Number of cars	Small	11	Logic car	14	Logic car	11	20 October
Number of cars	Small	11	Logic car	13	Logic car	6	20 October

Number of Employees

Office worker	Engineers	Section	McTormon	conductors	inspectors	switchers	linemen	Recordists	Total
67	7	132	132	121	24	45	10	36	514

Survey of Buildings (as of 20 June)

Kind	Power plant	Station	Shop	Office	Other	Total
Number of buildings	1	1	1	1	1	5
Stories	1	1	1	1	1	5
Floor area	300	100	100	100	100	700
Structure	300	100	100	100	100	700
Roof	300	100	100	100	100	700

Number of Property

Power and Distribution	Station	Shop	Office	Other	Total
200	100	100	100	100	600

Survey of Operation Condition

The streetcars were run under the name of the Streetcar Business Office, Power Control Bureau, Department of Industry. The per diem average run as of 25 June is shown below:

<u>Number of cars</u>	<u>Cars on run</u>	<u>Kilometers run</u>	<u>Number of Passengers</u>	<u>Receipt</u>
51	29	5200 Km	140,000	70,000 W8n

The average operation condition during October (after bombing) gives the following figures.

<u>Number of Cars</u>	<u>Cars Destroyed</u>	<u>Cars on run</u>	<u>Kilometers run</u>	<u>No. of Passenger</u>	<u>Receipt</u>	<u>Operat ion hours</u>
51	30	10	500 Km	3500	15,000 W8n	5

Plan for future operation

Between 20 October and 15 November the bombed carlines (representing 45 percent of the total mileage), and five out of 30 cars (all of which needs light repairs) will be completely repaired, along with track clearance by labor storm troopers between 20 October and 20 November, in order to operate 45 percent of 51 cars covering 2,000 kilometers per diem. When the war ends new cars will be imported by trade.

Survey of Stores

(as of 30 October 1950)

<u>Location</u>	<u>Material</u>	<u>Type</u>	<u>Unit</u>	<u>Quantity</u>	<u>Remarks</u>
No. 489, Inhüingni Door knob				500	
"	Arbesto plate	80x40mm		10	
"	Twisted iron wire	2.6x7mm		1,500	
"	Bamboo broomstick			300	
"	Copper plate	80x60cm		4	
"	Poreelain insulator			500	
"	Tin		Kg	35	
"	(Babet' meter		"	10	
"	Lead		"	15	
"	Antimony		"	20	
"	Receiver	porcelain2		25	
"	Brass		¢	1	
"	Carbon brush	25HP		300	
"		35HP		500	
"	Capcon			100	
"	Glue		Kg	20	
"	Insulating varnish		litre	1400	
"	Ihyue-umid'			5	
"	'Rues'		kwan	30	
"	Beater			100	
"	Hanger			300	
"	Spanner	7/8x1	kwan	10	
"	"	6/8x7/8	"	40	
"	Hanger		"	100	
"	High speed steel	1mx4	"	7	
"	Machine oil		D/M	1	
"	B grease		can	42	
"	Gear Grease		D/M	5	
"	Cement		¢	70	
"	Knob insulator			10	
"	Glass	90x60	box	8	
"	Iron plate	351.3mx5		2	
	Harddrawn copper wire	12 m/m		1,500	

summary of German car market development 1990-1994

From Phoenix Rd. to the Keyhole
(To the top of the station on the track)

Don't forget to check the book out before you go home.

[Faint handwritten notes at the bottom of the page]

1. $\frac{1}{2} \frac{d}{dt} \left(\frac{1}{2} \frac{d^2 x}{dt^2} \right) = \frac{1}{2} \frac{d^3 x}{dt^3}$
 2. $\frac{1}{2} \frac{d}{dt} \left(\frac{1}{2} \frac{d^2 x}{dt^2} \right) = \frac{1}{2} \frac{d^3 x}{dt^3}$

10. 2. 2007

James A. Bryant, 25-001610

4. 4166-3

[Faint handwritten signature]

13-11-11

portable direct-mount Urban Field #3

1

for $\alpha \in \mathbb{R}$ and $\beta \in \mathbb{R}$ with $\alpha + \beta = 1$.

/

/

1934
S. 1000

a. direct current kilowatt meter 420

/

Integrated Circuit Manufacturer

/

1

7. Allgemeine Bemerkungen über die Bedeutung des

/

" direct current wattmeter not

1

1 Round Meter

/

Megaphone 500V
1500V

7

George A. Ballinger

1

Home Power Plants and Capacity (June 1950)

<u>Locations of Home Power Plants</u>	<u>Capacity</u>	<u>No. of Generator</u>	<u>Remarks</u>
1. Chŏngjin Textile Mill	10,000	2	One being used
2. Chŏngjin Iron Mill	5,000	3	under repair
3. Yŏngan Chemical Factory	2,500	2	details unavailable
4. Hwanghae Iron Mill	6,000	1	
	1,000	1	
5. Pyŏngyang Corn Products Fact.	1,500	1	
6. Pyŏngyang Chemical Factory	6,250	1	
7. Madong Cement Factory	2,500	2	under repair
8. Haeju Cement Factory	10,000	3	Operation suspended
9. Sŭnghori Cement Factory	6,000	1	
	3,000	1	
10. Chŏnnaeri Cement Factory	5,000	1	operation suspended
11. Komusan Cement Factory	4,500	1	being used

Survey of Equipment at Home Power Plant, Korea corn Products Mill (as of November 1950)

Generator

A.C. Generator Serial

K.W. 1500 R.P 75 percent Volt 480 Amp 2260

Cy 60 Co Ph3 R.P.M 3600

Temp Wire 60C and pall loos

Excitation 125 Volt 85 Amps

Aelis - Chalmers Manufacturing Co.

Mil werkes wis U.S.S.

Motor

Steam Turbine U.S.S.

Excitator

D.C. Generator 15 KW 125 Volt (Two excitation

One is run by steam engine, and one by electric motor).

Attended Equipment (of electric motor)

Heavy oil pump	5 HP	one
Chimney dusting	60 HP	one
Lift pump	125 HP	one
Blower	25 HP	one
Stoker	25 HP	one
Drainage Pump	75 HP	one
Feed Pump	175 HP	one

Trans

Transformers (evacuated)

500 KVA	3300V/440 - 480 V	Three
150 "	"	Three
125 "	"	Two

Type - boiler hoist coil (with two motors)

General Condition

PAK Pong-nae This engineer, who has an experience of twenty years in operating generator above mentioned, is now maintaining his crew of 22 men and has finished overhaul. He is ready to make a test of the generator as soon as he will receive 300 KVA power, which is necessary to start moving it.

Generator . Up to 14 October, this generator was operated along with motor. An insulating test has proved of its possible operation since it keeps

2 .

Motor. Relay conductors, tumblings, etc., dismantled and hidden by the Reds, were recovered and repaired.

Excitator and parts. All intact.

Transformer. During Storage in bombshelter underground about 500 meters distant from the power plant, its insulating strength was weakened to a point of 10,000 but it is usable if properly dried and remantled.

Boiler. Completely overhauled. It was full of heavy oil ready for firing with pulverized coal, and the pulverizer was also in good condition.

Coal Supply Its own stock of pulverized coal, 70 tons, and the store of 5,000 tons at the Pyöngyang Chemical Factory will be sufficient for 100 day's use consuming 50 tons per diem. No return heat is available at the steam engine without a condenser, and per KWH consumption will be greater.

Transformer Oil. There was no stock at the Korean orn Products Mill. Only two drums of OT was found at the Textile Mill, Six drums are necessary in order to run three 500 KVA. Therefore, four drums will be sought at the substations in the power transmission system.

Power Reception. In order to send electricity from Sadong (now generating power) to the Korea Corn Products Mill through power distribution line during the test period, assistance is being sought from the restoration squad of the City Power Distribution Office.

Office

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	Supply	24,000	24,000	537
	Supply	15,000	15,000	556
	Supply	10,000	10,000	
	Supply	12,000	12,000	

Supply - 24,000 - 15,000 - 10,000 - 12,000 = 1,000

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Evacuation of Instruments 1st of October 1950

Location	Article	Type	Unit	Evacuation to Substation and Distance	Usable parts in inventory	Number of days required
Chinnanki Substation	Transformer	3 CX 1100	1	1000 ft	60	3
Chinnanki Substation	"	1 CX 500	1	1000 ft	20	3
Chinnanki Substation	"	1 CX 500	1	1000 ft	20	3
Tachikawa Substation	"	1 CX 500	1	1000 ft	20	3
Singapore	"	"	"	"	"	"
Panglima	"	1 CX 1100	1	1000 ft	60	3
Kayang	"	"	3	1000 ft	60	3
Manila	"	"	2	1000 ft	20	3
Wamp	"	"	"	1000 ft	20	3
Kuangyang	"	"	"	1000 ft	20	3
Chinnanki	"	1 CX 1100	2	1000 ft	60	3
Ochoi	"	"	3	1000 ft	20	3

Evacuation of Instruments 2nd of October 1950

to Substation.
Kiyang Chemical (Factory)

Location	Article	Type	Unit	Evacuation to Substation and Distance	Usable parts in inventory	Number of days required
	500KV	500KV	3	East Ground 500 m	Usable	60
	Transformer	Single phase	1	1000 m	"	20
	E.C.B.	66KV	1	1000 m	"	20
	P.T.	66KV	1	1000 m	"	40
	O.C.B.	11KV	1	1000 m	"	30
	C.T.	66KV 150/5A	2	150 m	"	30

Evacuation of Instruments 43 of October 1950

Kangson Steel Mill

Location	Articles	Capacity	Unit	Quantity	Destination: Usable, or unusable	Number of Instruments	Number of Instruments required
Kangson, Phasi-ngrin, Kangson-m	Transformer	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	"	100	15
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30

Evacuation of Instruments 44 of October 1950

Kangson Steel Mill

Location	Articles	Capacity	Unit	Quantity	Destination: Usable, or unusable	Number of Instruments	Number of Instruments required
Hadamuri, Chin-nang-pio	Transformer	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30

Evacuation of Instruments 45 of October 1950

Kangson Steel Mill

Location	Articles	Capacity	Unit	Quantity	Destination: Usable, or unusable	Number of Instruments	Number of Instruments required
Hadamuri, Chin-nang-pio	Transformer	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30
"	"	110KV/33KV	3	110KV/33KV	Usable	500	30

Remarks: Except Potary all were buried.

Evaluation of Instruments, Oct. 1950 - 1960 (Chinnampo Glass Factory Sub-area)

Location	Altitude (Feet)	Unit	Instrument	Remarks	Time
Chinnampo	400	1	Field	25	3
"	400	2	"	25	5
"	400	2	"	25	3
"	400	2	"	25	3
"	400	2	"	25	3

Evaluation of Instruments, Oct. 1950 - 1960 (Chinnampo Glass Factory Sub-area)

Location	Altitude (Feet)	Unit	Instrument	Remarks	Time
Tohangni, Chinnampo	400	1	Field	25	7
"	400	4	"	25	15
"	400	3	"	25	15
"	400	6	"	25	45
"	400	1	"	25	5

(12)
Ordinance No. 7

Ministry of Industry

Approved by KIM Il-sŏng, Cabinet Premier,
The Democratic People's Republic of Korea

Regulations
governing
Supply and Demand of
Electricity

The Pyŏngyang Power Distribution Office

Ordinance No. 7
 Ministry of Industry
 Approved by KIM Il-sŏng, Cabinet Premier,
 The Democratic People's Republic of Korea

Regulations governing Supply and Demand of Electricity.

Chapter I. (General Provisions

Article I. The supply and demand of electricity shall be governed in accordance with the present regulations. The supply organs referred to in the present regulations indicate all national organs for distribution of electricity, and the users referred thereto indicate all organs, bodies, enterprises, and individuals who consume electricity.

Article II. The supply and demand of electricity shall be limited by the following kinds and standards, provided that different standards may be applied in special cases.

System/kind of supply	Electric Light	Electric Power	Electric Heat
Electric System	Two-wire system, alternative current Single phase.	Three-wire system, alternative current three phase	Two-wire system, alternative current, Single phase
Frequency	60 cycles	60 cycles Low voltage 220V High " 3,300V 11,000V	60 cycles
Voltage	100 Volt	22,000V 44,000V 66,000V 154,000V 220,000V	100V
Supply Hours	Day or night	Day and night	Day and night

The voltages may, at the places of supply, be regulated up to 5 percent for light, and 10 percent for power and heat.

The supply organs, when deemed it necessary to overhaul or repair machines and electric lines, may suspend the daytime supply not more than two days per month. In the above case, the supply organs shall give a previous notice to the users within twenty four hours through newspapers, radios, and other information media or telephones, provided that the same notice may be omitted for the users of electric light.

Article III. The supply organs shall give a full information to the users about the regulations governing supply and demand of electricity, and shall post up explanatory bills on the bulletinboard at their business houses at all times.

Chapter II. Process of Supply and Demand

Article IV. Those who wish to use electricity shall apply to a supply organ in accordance with a prescribed form by stating thereon kind, use, capacity, number of lamps, and place of use. The same rule shall apply when any change or cut is made wholly or in part at the using categories.

Article V. The Supply organ shall, within ten days of receipt of the foregoing application, serve a notice to the applicant, informing its decision for or against his application.

Article VI. The supply organ shall provide electricity only when the following conditions are fulfilled and when it can satisfy the demand.

1. When the user will observe laws and regulations governing supply and demand of electricity.
2. When the electrical equipment and machines at the place of use are complete and in good order.

3. When the approval of the Director of power control Bureau, Ministry of Industry, has been obtained for the use of electricity above 50 kilowatts.

Article VII. When a change is made in users at a place of use one account of removal, transfer of any other reasons, the new user shall succeed to all rights and duties of the former user in the use of electricity. In the above case, the new user shall file a declaration with the supply organ without delay.

Chapter III. Installation and Repair of Electrical Structures

Article VIII. The installation, maintenance, and repair of distributing line (including transformer) and branch line leading to the place of use shall be borne by the supply organ. When a special installation or a large expense is required on account of the actual condition or any other reason, the user may be charged for such expense in full or in part. In such a case the equipment shall be owned by the supply organ.

Article IX. The installation, maintenance, and repair of electrical apparatus and electrical instruments inside the place of use shall be performed by the supply organ at the expense of the user.

Article X. The user may, with the permit of the Minister of Industry, install electrical apparatus for home use at his own expense, and shall repair his own equipment so that the general supply of electricity may not be interrupted.

- Article XI. The new installation or change of watt-hour meter inside the place of use shall be performed by the supply organ by kind of supply, ie., lamp, power, and heat.
- Article XII. The user may not employ any electrical instruments which have not been tested or authorized by the Ministry of Industry. The supply organ may, during supplying electricity, test electrical apparatus and electrical instruments any time at the place of use, and it necessary, seal the current limiter or electrical instruments.
- Article XIII. The supply organ, when deemed it necessary on security reasons, may order change, repair, special installation, or dismantling of electrical apparatus and electrical instruments in the ownership of the user. In such a case the working expense shall be borne by the user.
- Article XIV. The user, when perceived his electrical apparatus in bad conditions, shall immediately inform the supply organ. On being informed of the case the supply organ shall overhaul the apparatus in question within three hours in cities and twelve hours in other places.
- Article XV. The user, when wishing erection, addition, change, or repair of structures directly affecting his electrical apparatus, shall inform the supply organ in advance.
- Article XVI. When the user intentionally or through neglect damaged or lost any electrical apparatus or electrical instruments in the ownership of the supply organ, he shall bear the responsibility of compensation.
- Chapter IV. Method of Supply

Article XVII. Lamp light shall be supplied by three kinds as follows:

1. Fixed - rate lamp light to a place using less than 30 lamps for a fixed amount of rates on the basis of candle-power per lamp.
2. Meter-rate lamp light to a place using more than five lamps for amounts charged on the basis of number of lamps and wattage used, provided when deemed necessary, light may be supplied for meter rates to a place using less than five lamps.
3. Temporary lamp light to a place using light continually for a period less than one month on the basis of a fixed amount or meter rates.

Article XVIII. The lamp light for illumination may not be supplied during daytime, unless deemed necessary for work or for the actual condition of the place of use.

Article XIX. The user of lamp light may additionally use radio, electric clock, or home iron (below 500 W.) with the permit of the supply organ.

Article XX. Power shall be supplied by three kinds as follows:

1. Permanent power shall be supplied to those who continually use electric power for a period more than three months by meter system on the basis of contract capacity.
2. Temporary power shall be supplied to those who continually use electric power for a period less than three months according to the method of supply as in the case of permanent power.
3. Summertime power shall be supplied to irrigation, pumping, and other farming activities, and summer time uses only according to the method of supply as in the case of permanent power.

Article XXI. The electricity supplied as power shall not be used for lighting or heating provided that a proprietor of an electrical apparatus may use it for lighting in workshop and office of production

Article XXII. The contract capacity of power shall be equal to the gross capacity of electrical equipment inside the place of use provided that in case of using a private transformer it shall be equal to the larger capacity of the transformer or the equipment. When the equipment capacity is marked with HP or KVA, it shall be counted as 1 KW for 1 HP or 1 KVA. When a figure in the gross capacity is less than 1 KW, it shall be counted as 1 KW.

In the supply of more than 50 KW, a maximum contract capacity may be arranged regardless of the equipment capacity.

Article XXIII. The method of supply of electric heat shall follow the meter system on the basis of contract capacity.

Article XXIV. The electricity supplied as heat shall not be used for lighting.

Article XXV. The contract capacity of electric heat shall be determined on the basis of the gross equipment capacity as follows provided that in case of using a private transformer, it shall be determined according to the larger capacity of the transformer or the equipment.

1. Current limiter.
2. Maximum capacity of instruments with one socket.
3. Largest capacity among instruments used with more than two sockets. When a figure less than 1 KW. appears in the aggregate gross capacity, it shall be counted as 1 KW.

Article XXVI. The actual maximum wattage of power and heat shall be determined according to the hourly or half-hourly indicator of the watt-hour meter, the largest wattage of a month or a given period being the largest power of the same month or the same period.

Article XXVII. The users of electric power and electric heat shall always maintain an equilibrium of burden among power and phases used at the place of use, and keep the moment of force at over 85 percent.

Article XXVIII. The proprietor of electrical structures for home use shall enter a clear record of necessary items concerning power supply by keeping a diary in a prescribed form, and he shall produce the same record or send its copies whenever is required by the supply organ.

Chapter V. Limitation, Cut, and Suspension of Supply

Article XXIX. A user, corresponding to one of the following categories, shall have his power supply at or limited by the supply organ.

1. When ordered by law and ordinance, Cabinet decision, or directive of the Minister of Industry.
2. When compelled by natural calamity or other force majeure.
3. When threatened with possible Breakdown of electrical structures, or necessary for their repair, change, overhaul, etc.,
4. When necessary for security

Article XXX. A user, corresponding to one of the following categories, shall have his power supply suspended or rejected by the supply organ.

1. Violating laws and ordinances, decisions and directives governing electrical industry.
2. Stealing and misusing of electricity.
3. Delaying payments of electric rates and dues.
4. Damaging the supply organ by breakdown or loss of electrical structures in the ownership of the supply organ, or by improper use of electricity, through design or grievous error.
5. Using electricity, or refusing inspection of electrical apparatus, contrary to the provisions of Articles XII and XXXII.
6. Nonfulfilling order of Article XIII.
7. Disregarding the notice of Article XV.
8. Neglecting recording required by Article XXVIII, or entering a false record.

Article XXXI. Although damage is incurred by a user due to limitation, cut, suspension, or rejection of current supply in accordance with the two foregoing Articles, the supply organ may not be responsible for compensation.

Chapter VI. Control on Steel and Misuse of Electricity.

Article XXXII. The supply organ, in order to keep steal and misuse of electricity under control, may inspect the condition of using of electricity at any time.

Article XXXIII. When a user has committed one of the following

, acts without permission in the use of electricity,
 he shall be regarded as having stolen and
 misused electricity.

1. New installation, addition, or use of electricity exceeding the contract capacity.
2. Lighting night-lamps on daytime.
3. Using electricity for purposes and at places other than those approved or authorized.
4. Illegal use of meter-apparatus by change thereof.
5. Use of unauthorized instruments.

Article XXXIV. When the fact of steal or misuse is corresponding to one of the following items, the user may become object of suspension or rejection of supply for a period not exceeding three months in accordance with Article XXX. When the circumstance is of moment, it shall be dealt with by legal procedures.

1. Illegal use of electricity by change of a meter apparatus.
2. New installation or addition of power machines.
3. New installation or addition of electrified rooms(ondol).
4. New installation or addition of electrical heat.
5. New installation of two or more lamps, or addition of three or more lamps.
6. Use of unauthorized instruments

7. Repeated acts of offence.

Article XXXV. When an electrical equipment or instrument has been damaged in the act of stealing, or lost due to steal or misuse, an expense covering the complete restoration of the same shall be collected.

Article XXXVI. All instruments which have been stolen or misused shall be seized.

Chapter VII. Electric Rates

Article XXXVII. The electric rates shall be charged according to sealing prices fixed by the State.

Article XXXVIII. The user shall pay on demand the following electric rates at a place or to a person designated by the supply organ.

1. Fixed electric rates

A fixed amount of electric rates, covering one month or several months, shall be collected in advance by counting a calendar month as one month.

2. Meter rates

A total amount of the monthly basic rates and the meter rates for wattage used shall be collected monthly as the electric rates covering the given month by counting a calendar month as one month. The meter-rates shall be calculated by the wattage used between the days of inspection in the previous month and in the current month. The basic rates shall be paid although current was not used.

Unless otherwise provided for, the calculation of electric rates shall be performed by the unit of watt-hour meter.

3. Temporary power rates

When current is supplied by a fixed amount system, such amount of rates shall be paid in advance; and when by meter system a prepayment of an estimated amount, shall be made to be settled with an accurate account on finishing the use of electricity,

4. All fees and sundry working expenses shall be collected on each particular occasion.

Article XXXIX. When the number of days using the current is

less than a full month under the system of monthly payment of fixed rates, the payment for that month shall be calculated as follows:

When current was used for less than 15 days, it shall be determined as a half months payment; and when current was used for more than 16 days, it is a full month's payment.

Article XL. When an accurate inspection of the meter is impossible

due to breakdown of the watt-hour meter, the wattage used shall be determined by the larger amount of the average power used during the preceding three months before the period of that account and the actual results of the corresponding month in the preceding year. When there is a marked difference in the percentages of burden. The amount shall be

figured out by taking the equipment at the place
of use and the condition of use into consideration.

Article XLI. When the fact of steal or misuse of current is
confirmed, the rates unpaid due to that fact shall
be collected as follows:

1. Wattage stolen

It shall be figured out by multiplying the capacity
stolen with the hours used according to the following
standard:

(1) Home use

Electric lamp	Daily standard hours used	14 hours
Radio	"	7 "
Electric heat	"	6 "
Electrified room	"	24 "
	(ondol)	

(2) Industrial use

The number of hours used shall be figured out
by taking the working hours and the use of current
into consideration.

(3) When, in the course of illegal use of current of
by change of meter apparatus, the wattage used
is not clear, it shall be regarded as having
used the total apparatus 24 hours per day.

(4) When the period of steal and misuse is not clear,
it shall be determined as six months.

2. Rates on steal

An amount not exceeding five times the maximum amount
of electric rates of the same kind shall be collected
as rates on wattage stolen.

Article XLII. The basic rates of power for summer use shall be collected in the amount corresponding to three months' rates when the period of use is less than three months.

Article XLIII. For private users inside the electrical structures, the ordinary rates shall be applied to electric lamps and electric heat used at their attached homes outside the places provided for in Article XXI.

Article XLIV. When a user delayed payment of rates, he shall pay arrears which is to be figured out from the fifty day after the request for payment in accordance with Article XXXVIII.

Article XLV. When the supply of current, provided for in Article XXIX, stopped more than 24 hours continually, the basic amount of fixed electric rates and meter rates shall be deducted from the rates of that month by adding up the number of corresponding days. In this case, one month shall be counted as 30 days, and the fraction amount of less than one 'chön' shall be counted as one 'chön' when the fraction is more than .5, and cut away when less.

Article XLVI. When the tariff change after the rates have been figured out, an accurate settlement shall be made at the time of the next calculation.

Article XLVII. The supply organ may demand the user to offer a guarantor or a sum of guarantee money when necessary.

Supplementary Rules. The present regulations shall become effective from 1 January 1949,
The existing users at the time of enforcement of the present regulations shall be regarded as having applied for the supply of electricity.

Pyöngyang
29 December 1948

-174-

KIM Ch'aek
Minister of Industry the Democratic
People's Republic of Korea

ELECTRIC TARIFF

<u>Kind</u>	<u>Item</u>	<u>New rates</u>	<u>Old rates</u>
Fixed rate lamp	per lamp per month		
"	(12.5W)	700	
"	(20 W)	800	
"	(30 W)	900	
"	(40 W)	1000	
"	(60 W)	1500	
"	(100W)	2500	
Meter lamp	basic rates (per lamp per month)	3250	250
"	power rates (1 KW H)	150	200
Temporary lamp	per lamp per day (20W or less)	150	
"	(40W ")	200	
"	(60W ")	300	
"	(100W ")	400	
Power	basic rates		
"	(From 1 KW up to 50 KW per month)	5000	3000
"	(" 50 " 100 ")	3000	700
"	(" 100 " 200 ")	1500	600
"	(" 200 " 350 ")	1000	550
"	(" 350 " 500 ")	1000	500
"	(" 500 " 750 ")	700	450
"	(" 750 " 1000 ")	700	400
"	(" 1000 " 2000 ")	600	350
"	(" 2000 " 3500 ")	500	300
"	(" 3500 " 5000 ")	500	250
"	(" 5000 " 10,000 ")	400	
"	(above 11,000 KW ")	300	
"	power rates		
"	(from 1 KWH up to 2500 KWH per month)	20	
"	(" 25,000 " 50,000 ")	12	
"	(" 50,000 " 100,000 ")	08	09
"	(" 100,000 " 200,000 ")	06	07
"	(" 200,000 " 500,000 ")	05	06
"	(" 500,000 " 1,000,000 ")	04	05
"	(above 1,000,000 KWH ")	03	04
Temporary power, adding 50 percent of ordinary rates up to one month.	" 30 "		two months.
" 20 "			three months.
Equal to ordinary rates above three months.			
Electric heat, basic rates (MP 1 KW per month)		1000	500
" (KWH ")		100	50
Fixed rate radio per set per month		500	500
" iron " (home use only)		1000	1000
" clock " "		500	500
Fee Location of side-line, lamplight, and heat		2000	3000
per side-line 1 ☐			
" power " "		cost price	cost price
Installation, dismantling, and changing location of meter.			
	low voltage	2000	3000
	high voltage	6000	5000

Fee	Installation, dismantling, changing location of lamp and heat		
	per lamp & per iron	2000	2000
	Cutting and reinstalling fee (lamp) per case	1000	cost price
	" (power) "	10000	10,000
	" (heat) "	2000	6,000
	Test Fee (lamp light and heat) per lamp	2000	2,000
	Installation of motor, transformer, and distributing line		
	per piece per case low voltage	6000	6,000
	" high voltage	10000	10,000
Gas	per socket per month	200	
	" " three months	160	